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Unregulated Emissions for Vehicles Operated under Low Speed Conditions

Southwest Research Inst., San Antonio, TX

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FOREWORD

This project work assignment was initiated by the Control Technology Assessment and Characterization Branch, Environmental Protection Agency, 2565 Plymouth Road, Ann Arbor, Michigan 48105. The engineering and analytical effort on which this report is based was accomplished by the Department of Emissions Research of Southwest Research Institute, 6220 Culebra Road, San Antonio, Texas 78284. The program, authorized by Work Assignment 4 under Contract 68-03-3073, was initiated April 26, 1982 and was completed September 1982. This program was identified within Southwest Research Institute as Project 05-6619-004. The EPA Project Officer for the program was Mr. Robert J. Garbe of the Emission Control Technology Division, Environmental Protection Agency. The SwRI Project Leader and principal researcher for the project was Dr. Lawrence R. Smith. Mr. Charles M. Urban of SwRI was involved in setting up the vehicles for malfunction operation in the program. Mr. Charles T. Hare was Project Manager and was involved in the initial technical and fiscal negotiations and subsequent major program decisions.

ABSTRACT

This report describes the laboratory effort to characterize regulated and unregulated exhaust emissions from six automobiles with various emission control systems at idle and low speed operation. The automobiles were evaluated at manufacturer's specifications and under malfunction operation. Exhaust emission constituents measured, in addition to the currently regulated emissions, include: sulfates, aldehydes and ketones, cyanide, hydrogen sulfide, and ammonia.

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SUMMARY

The major objective of this project task was to evaluate regulated and unregulated exhaust emissions from automobiles operating at idle and at low speeds. These automobiles were equipped with a cross section of currently available emission control systems and were tested at manufacturer's specifications and under malfunction conditions.

The study involved six vehicles selected from five vehicle/emission control system categories: non-catalyst (1970 Ford Fairlane), Diesel (1981 Oldsmobile Delta 88), three-way catalyst (1981 Volkswagen Rabbit and 1982 Mercury Zephyr), oxidation catalyst with air pump (1980 Buick Century), and oxidation catalyst without an air pump (1978 Chevrolet Nova). Engine sizes on these automobiles ranged from a 105 CID, 4 cylinder engine to a 350 CID, 8 cylinder engine.

Unregulated emissions measured included: particulates, aldehydes including formaldehyde and acrolein, ammonia, cyanides, hydrogen sulfide, and sulfate. A number of the analytical procedures for these compounds were developed in previous projects.

Five of the six cars in the program were also evaluated under malfunction operation. The malfunction configurations evaluated in this program included one or more of the following malfunctions: Rich Best Idle, air pump failure, and oxygen sensor failure. The test sequence used for vehicle testing included 5-minute Cold and Hot Start Idle tests and 12-minute Cold and Hot Start Modified NYCC tests. The Modified NYCC test was developed in this program to provide a low-speed driving cycle which simulated vehicle operation in a typical parking garage.

A substantial data base, for the cars evaluated, was generated in this project. These data were analyzed to the extent applicable and are presented in several different formats to facilitate their review and usage.

The most significant observations made from the data in this program (not necessarily in order) are as follows:

- In general the Cold Idle and Cold Modified NYCC tests gave higher regulated emissions and fuel consumption rates than their hot start counterparts.
- High overall emissions, both regulated and unregulated, and fuel consumption rates were noted in most cases for vehicles operating under malfunction conditions as compared to baseline operation.
- One or more aldehydes and ketones were found in 99 percent of the samples, but individual aldehydes were found less frequently.

- The highest individual aldehyde emission rate, 3.97 mg/min formaldehyde, was detected during Hot Idle - Rich Best Idle operation of the Ford Fairlane.

- The Ford Fairlane (a non-catalyst vehicle) also produced the highest levels (baseline and malfunction) of acetaldehyde, acrolein, propionaldehyde, crotonaldehyde, isobutyraldehyde, benzaldehyde, and total aldehydes and ketones for the six cars tested.

- Rich Best Idle operation, as opposed to baseline operation, produced higher aldehyde emissions for the Ford Fairlane (a non-catalyst vehicle) and the Volkswagen Rabbit (a three-way catalyst vehicle). In contrast, however, Rich Best Idle operation combined with a disconnected air pump gave lower aldehyde emissions than the baseline for the Buick Century.

- Hydrogen sulfide was not detected in any of the samples analyzed in this program.

- The Ford Fairlane (a non-catalyst vehicle) gave the highest ammonia emissions for the program while operating at Rich Best Idle.

- The highest baseline levels of ammonia for the six cars were found in the Volkswagen Rabbit (a three-way catalyst vehicle) exhaust.

- Cyanide emissions were higher during malfunction operation than during baseline operation for all cars evaluated.

- When comparing emissions at low-speed/idle with emissions generated in previous projects using equivalent or similar cars driven over the Federal Test Procedure (emissions compared on mass per unit time basis), the following observations were made:

Emission Control Type	Low-Speed/Idle vs FTP Emission Comparison
Non-Catalyst	Higher ammonia and cyanide, Low-Speed/Idle Emissions Lower HC, NO_x, particulate, sulfate, and aldehyde, Low-Speed/Idle Emissions
Catalyst-Equipped	In general, higher Low-Speed/Idle Emissions
Diesel	Similar emissions for the Low-Speed/Idle and FTP tests

- Based on a cursory examination of the toxicological properties of the regulated and unregulated emissions evaluated in this program, the most significant emissions appear to be the currently regulated pollutants, carbon monoxide and oxides of nitrogen. Next in significance appear to be acrolein, cyanide, and formaldehyde.

I. INTRODUCTION

This report describes the effort to characterize regulated and unregulated exhaust emissions from six automobiles operating at idle and at low speeds. These six automobiles were equipped with a cross section of currently available emission control systems and were evaluated at manufacturer's specifications and under malfunction operation. This is one of several programs to be completed at SwRI involving a large number of unregulated emissions from automobiles. The previous projects involved malfunctioning automobiles(1,2,3,4)*, automobiles designed for low NO_x operation(5), high-mileage catalyst-equipped automobiles(6), and automobiles fueled with methanol.(7)

A. Project Objective

The primary objective of this project was to evaluate regulated and unregulated exhaust emissions from automobiles during idle and low speed operation. Six automobiles, equipped with a cross section of emission control systems, were evaluated at manufacturer's specifications and under malfunction conditions.

B. Emission Measurement Procedures

The compounds or groups of compounds evaluated, along with the sampling methods used, were as follows:

Sampling Methods	Compounds Evaluated
Bag	HC, CO, NO_x, CO_2
Filter	Particulates, Sulfate
Impinger	Cyanide, aldehydes, ammonia, and hydrogen sulfide

Several of these procedures for measuring the unregulated emissions were developed in other projects, and were reported in two widely distributed interim reports.(8,9)

C. Automobiles Evaluated

Six automobiles equipped with a cross section of emission control systems were evaluated in this project. The automobiles evaluated included a 1970 Ford Fairlane (no catalytic aftertreatment), a 1981 Oldsmobile Delta 88 (Diesel), a 1982 Mercury Zephyr (three-way catalyst), a 1981 Volkswagen Rabbit (three-way catalyst with closed loop fuel system), a 1980 Buick Century (oxidation catalyst with air pump), and a 1978 Chevrolet Nova (oxidation catalyst). These cars were either rented locally or were obtained through the EPA Project Officer. The Ford Fairlane(4) and the Volkswagen Rabbit(7) had been tested in previous EPA Projects.

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*Numbers in parentheses designate references at the end of this report.

D. Malfunction Conditions Evaluated

All six of the automobiles were evaluated in a baseline configuration (i.e., tuned to manufacturer's specifications). The five gasoline-powered automobiles were also evaluated under the following malfunction conditions:

Ford Fairlane - Rich Best Idle
Mercury Zephyr - Air Pump Failure
Volkswagen Rabbit - Rich Best Idle plus Oxygen Sensor Failure
Buick Century - Rich Best Idle plus Air Pump Failure
Chevrolet Nova - Rich Best Idle

The rich best idle condition involved adjusting to the idle mixture producing the highest engine speed at idle. Oxygen sensor failure was simulated by disconnecting the electrical connection to the oxygen sensor, and air pump failure was simulated by disconnecting the air hose at the check valve and capping the check valve inlet. The sixth automobile, a 5.7 ℓ Diesel 1981 Oldsmobile Delta 88, was evaluated only in the baseline configuration.

E. Vehicle Testing

Each of the automobiles involved in this study was tested in duplicate or triplicate in a baseline configuration and, with the exception of one vehicle, in duplicate or triplicate under malfunction operation. One vehicle, the Oldsmobile Delta 88, was tested only in the baseline configuration. The test sequence included a Cold Idle test, a Hot Idle test, a Cold Modified NYCC test, and a Hot Modified NYCC test. The modified NYCC tests were developed in this program to simulate the low speed operation expected in a typical parking garage.

II. GENERAL EQUIPMENT, INSTRUMENTS, PREPARATIONS AND PROCEDURES

This section describes the automobiles, the fuels, the facilities, and the general instrumentation and procedures utilized in this project. The overall sampling systems for the unregulated emissions are also discussed.

A. Automobiles

One diesel- and five gasoline-powered automobiles were evaluated in this project. The automobiles are described in Table 1. Several of the cars are shown in Figure 1. Four of the cars were rented locally, while two of the cars, the Ford Failane and the Volkswagen Rabbit, were obtained through the EPA Project Officer and had been tested in previous EPA projects.

B. Fuels

Three fuels were used in the course of this program; Chevron UL-CQ26B1 unleaded gasoline, Fina regular leaded gasoline, and a "national average" No. 2 diesel fuel. The Chevron unleaded fuel used in this project was of the type provided to auto manufacturers for emissions durability mileage accumulation tests. This fuel had been used in previous unregulated emission projects involving catalyst-equipped cars. The fuel was used for the catalyst-equipped cars (Cars 93, 94, 95 and 96) in this project so that the emissions data could be compared with the earlier work without introducing fuel effects. This gasoline is described in Table 2, and has a sulfur level of 0.03% as specified in Advisory Circular No. A/C 26B1. The hydrogen-to-carbon ratio was 1.89, and the SwRI Identification Number was EM-518-F. The fuel had lost some of the light ends during storage (RVP had dropped from 8.9 to 6.2). To correct this, n-butane was injected into the fuel to bring the RVP back up to near the original value (8.8).

The Fina regular leaded fuel was used for testing the non-catalyst-equipped 1970 Ford Fairlane. This fuel was obtained in a single batch from a local service station and was assigned the SwRI Identification Number, EM-516-F. This fuel had a lead content of 1.02 grams per gallon and a (R + M)/2 octane number of 89.0.

The diesel fuel used in this program was selected to represent a "national average" No. 2 diesel fuel of 1978, and was used in the testing of the diesel-powered Oldsmobile Delta 88. This fuel, EM-329-F, is described in Table 3.

C. Dynamometer and CVS Systems

Gasoline System - A Clayton Model ECE-50 chassis dynamometer with a direct-drive variable-inertia flywheel system was utilized for all gasoline-powered vehicle transient testing. This direct-drive inertia system simulates equivalent weight of vehicles from 455 kg (1000 lb) to 4025 kg (8875 lb), in 55 kg (125 lb) increments.

TABLE 1. AUTOMOBILES EVALUATED

Project Car No.	Year	Make	Model	Body Type	ID or Serial Number
91	1970	Ford	Fairlane	2-dr	F0A29F272235F
92	1981	Oldsmobile	Delta 88	4-dr	1G3AY67N9BX108402
93	1982	Mercury	Zephyr	4-dr	1MEBP71B4CK604123
94	1981	Volkswagen	Rabbit	4-dr	1VWGB9171BY085460
95	1980	Buick	Century	4-dr	4H69AAZ130360
96	1978	Chevrolet	Nova	4-dr	1X69D8W192412

		Emission Controls					
Project Car No.	Engine CID/Cyl	Catalyst	Air Pump	EGR	Transmission Type/Gears	Accessories	Odometer Mileage
91	302/8	No	No	No	A/3	P.S.,A.C.	67432
92	350/8 Diesel	No	No	Yes	A/3	P.S.,P.B., A.C.	36856
93	200/6	3-way	Yes	Yes	A/3	P.S.,P.B., A.C.	7217
94	105/4	3-way	No	No	A/3	A.C.	16156
95	231/6	oxidation	Yes	Yes	A/3	P.S., P.B., A.C.	31188
96	250/6	oxidation	No	Yes	A/3	P.S., P.B., A.C.	58377

	Chassis Dynamometer Settings			
Project Car No.	Inertia Kilograms	Power Kilowatts	Inertia Pounds	Power Horsepower
91	1815	8.9	4000	12.0
92	1930	8.4	4250	11.3
93	1590	8.0	3500	10.7
94	1135	5.7	2500	7.7
95	1645	8.4	3625	11.3
96	1815	7.8	4000	10.5

Car 91 - 1970 Ford Fairlane

Car 93 - 1982 Mercury Zephyr

Car 94 - 1981 Volkswagen Rabbit

Car 95 - 1980 Buick Century

Figure 1. Four of the cars evaluated in this project

TABLE 2. DESCRIPTION OF CHEVRON UL-CQ26B1 UNLEADED GASOLINE

Property	Test Method	Test Result
Gravity, °API at 60°F	ASTM D 1298	58.4
Research Octane No.	ASTM D 2699	91.6
Motor Octane No.	ASTM D 2700	83.2
Sensitivity		8.4
Lead, g/gal.	ASTM D 3237	0.001
Sulfur, wt. %	X-Ray - ASTM D 2622 (Modified)	0.029
Phosphorus, g/gal.	ASTM D 3221	0.0002
Manganese, g/gal.	EAM 128-74	0.001
Gum, mg/100 mℓ	ASTM D 381	
Unwashed		85
Washed		0
Reid Vapor Pressure, psi	ASTM D 323	8.9
Distillation, °F (% Evaporated)	ASTM D 86	
IBP		97
10%		129
50%		212
90%		328
EP		386
Recovery, %		97.5
Residue, %		1.0
Loss, %		1.5
Acidity of Residue	ASTM D 1093	Pass
Hydrocarbons, Vol %	ASTM D 1319	
Aromatics		28
Olefins		8
Saturates		64
Benzene, Vol %	Chevron Research Technique	2.0
Water & Sediment, Vol %	ASTM D 2709	<0.001
Oxidation Stability, Hr	ASTM D 525	24+
Copper Corrosion	ASTM D 130	1A

NOTE: These inspection data were provided by the Chevron Research Company

TABLE 3. DESCRIPTION OF DIESEL FUEL EM-329-F

Cetane No. (D613)	50
Cetane Index (D976)	52
Gravity, °API @ 60°F	37.5
Density, g/mℓ @ 60°F	0.837
Carbon, wt. %	85.8
Hydrogen, wt. %	13.0
Nitrogen, ppm (oxid. pyrolysis)	48
Sulfur (lamp), %	0.24
Calculated H/C, numeric	1.81
Carbon No. range (G.C.)	8-24
Aromatics, vol. % (D1319)	21.3
Olefins, vol. % (D1319)	1.7
Paraffins, vol. % (D1319)	77.0
Viscosity, cs @100 °F (D445)	2.36
Gum, mg/100 mℓ (D481)	14.3
Total solids, mg/ℓ	7.4
Metals in fuel, x-ray	0[a]
Boiling Range, °C (IBP-EP, D86)	191-340
10% point	219
20%	231
30%	242
40%	251
50%	260
60%	269
70%	278
80%	290
90%	307
95%	323
Residue, wt. % (D86)	1.3

[a] <10 ppm of Cr, Fe, Ni, Cu, Zn, and Mg; <70 ppm Pb; <100 ppm Al and Si

The constant volume sampler (CVS) used for these evaluations was SwRI CVS Number 2. This unit has a nominal capacity of 9.0 m^3/min (320 cfm). A nominal 460 mm (18 inch) diameter by 5 m (16 foot) long dilution tunnel was used between the intake filter and the CVS to enable sampling of particulates.

Partial views of the chassis dynamometer, the dilution tunnel and the intake to the CVS can be seen in Figure 2. Both the dynamometer and the CVS were calibrated, maintained and operated in accordance with the manufacturer's instructions and the appropriate sections of the Code of Federal Regulations applicable to light-duty vehicles.(10)

A 142 m^3/min (5000 cfm) fan was placed in front of the automobiles during testing for cooling.

Diesel System - A second Clayton Model ECE-50 chassis dynamometer with a direct-drive variable inertia flywheel system was used for all diesel-powered vehicle transient testing. The CVS used for the diesel evaluations was SwRI CVS Number 17. This unit has a nominal capacity of 14.0 m^3/min (495 cfm). A nominal 460 mm (18 inch) diameter by 5 m (16 foot) long dilution tunnel was also used with the diesel system to enable sampling of particulates. Partial views of the diesel chassis dynamometer, dilution tunnel and the CVS can be seen in Figure 3. As was the case for the gasoline system, the dynamometer and the CVS were calibrated, maintained and operated in accordance with the manufacturer's instructions and the Federal Regulations applicable to light-duty vehicles.(10)

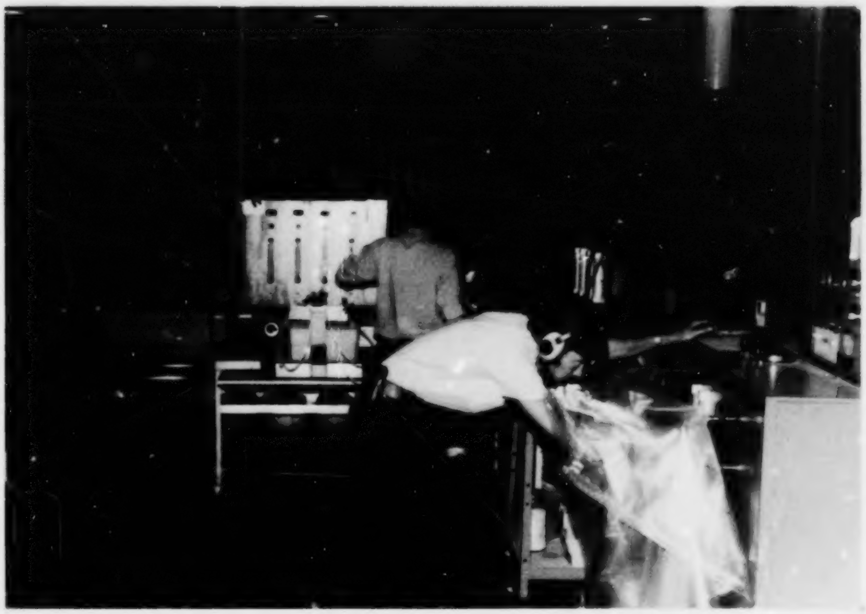
D. Exhaust Sampling and Analysis

A pictorial schematic of the exhaust and sampling system (applicable to both the gasoline and diesel systems) is shown in Figure 4. This system is in accordance with the guidelines established in previous unregulated emission projects conducted at SwRI for the EPA. The primary feature of this system is the number of sampling probes and systems necessary to collect all of the required unregulated emission samples. This complexity is illustrated in the views of the gasoline system shown in Figure 2.

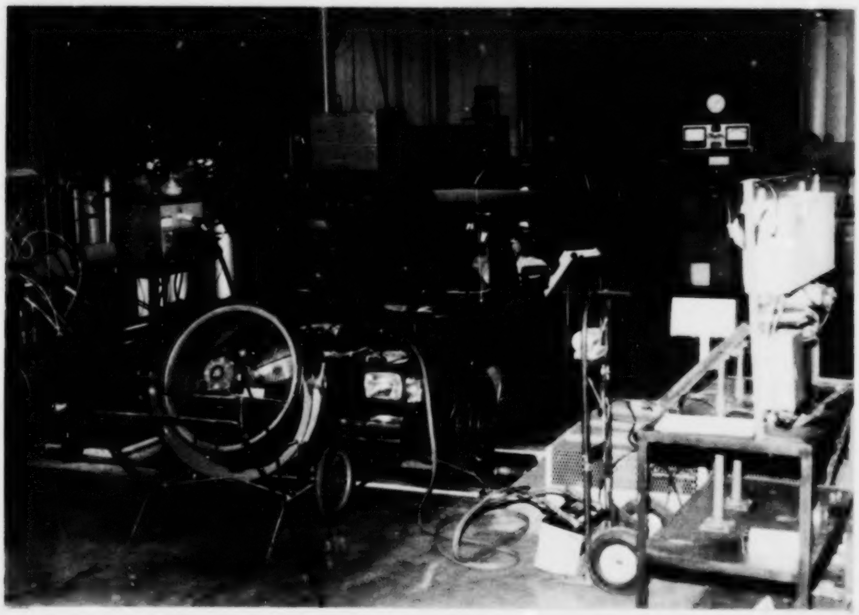
This section has described the dilution tunnel and provided some insight into the overall sampling system assembly. More details on each of the individual sampling systems for the unregulated emissions are given in Section III.

E. Instrumentation for Regulated Emissions

Bagged samples of the dilute exhaust were evaluated for HC, CO, NO_x, and CO_2 using SwRI Bag Cart Number 1. This bag cart was designed, calibrated and operated in accordance with the appropriate sections of the Code of Federal Regulations applicable to light-duty vehicles.(10)

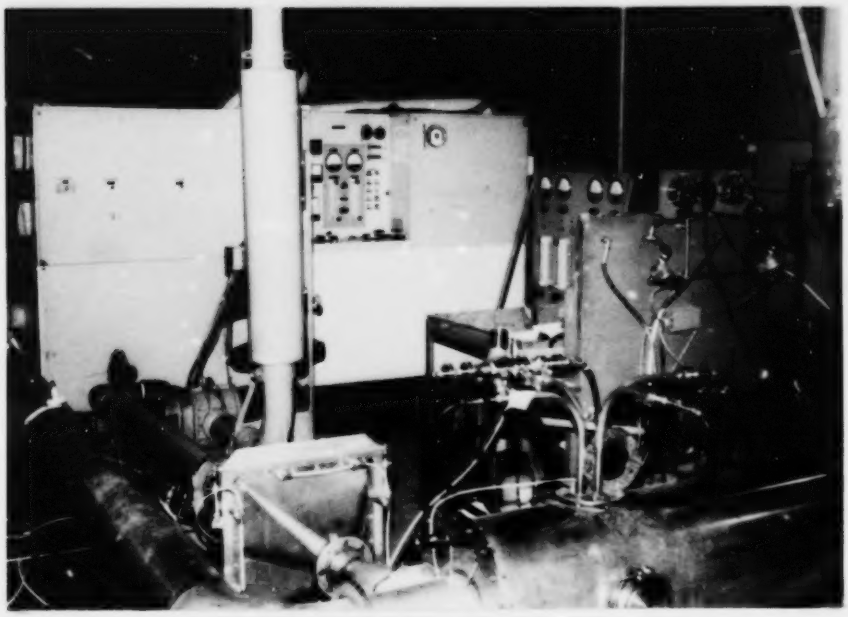


CVS Side of System

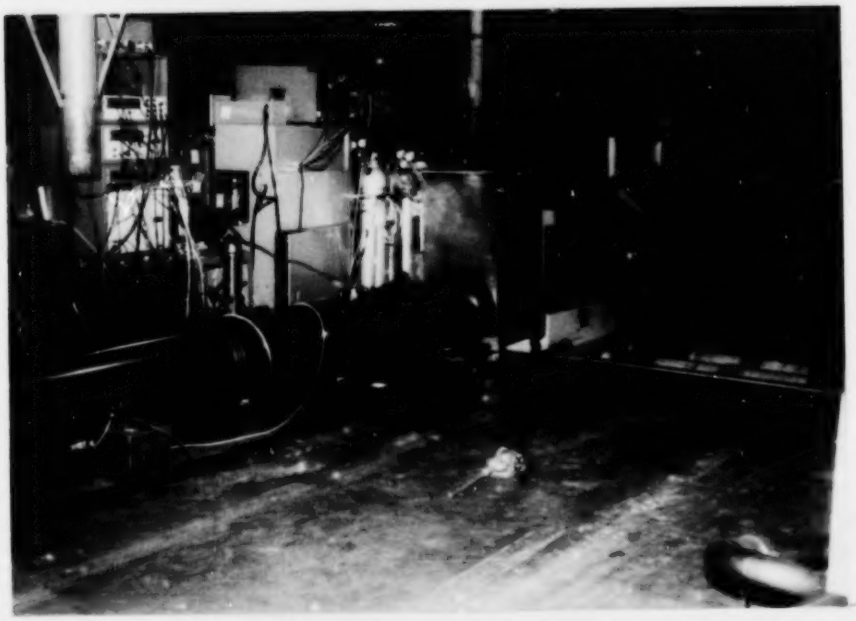


Dynamometer Side of System

Figure 2. Views of the gasoline emissions sampling system

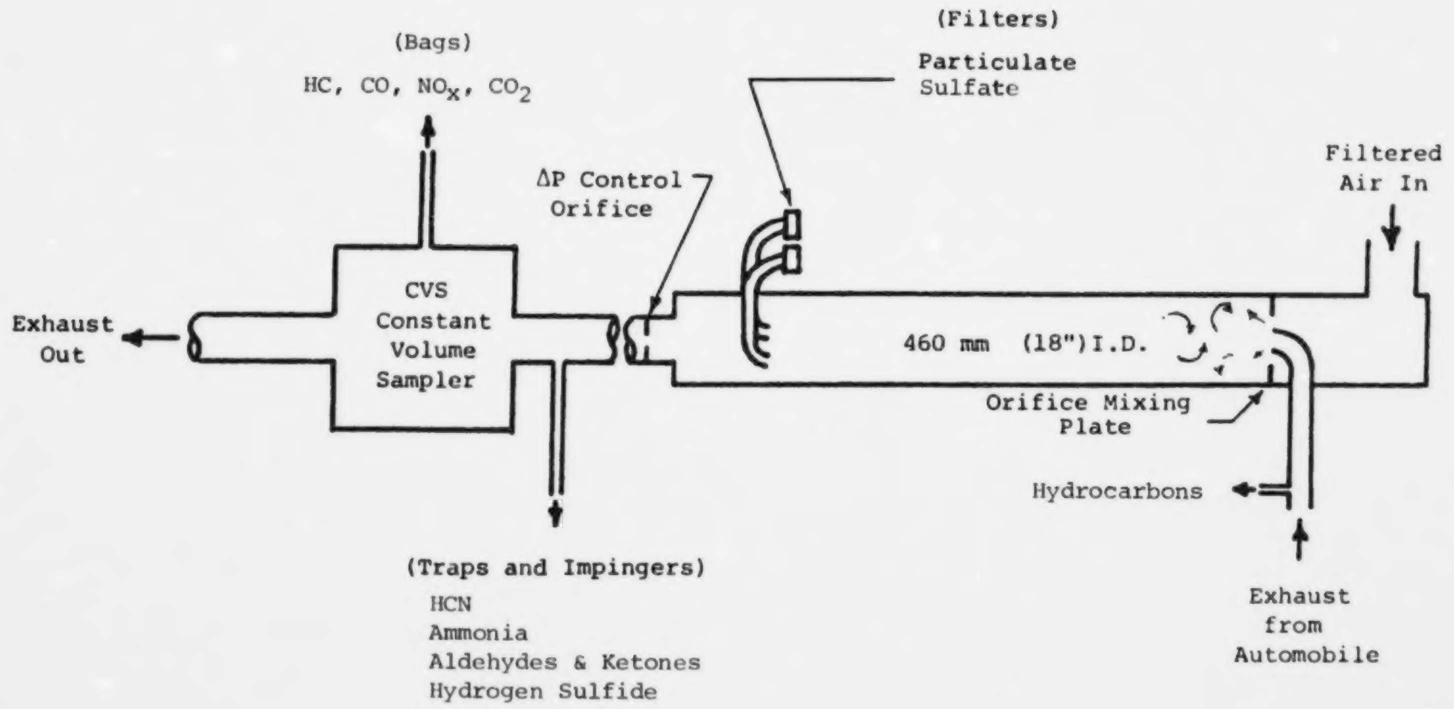


CVS Side of System



Dynamometer Side of System

Figure 3. Views of the diesel emissions sampling system


(Bags)
HC, CO, NO_x, CO_2
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ΔP Control
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CVS
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Sampler
Exhaust
Out
460 mm (18")I.D.
Orifice Mixing
Plate
Hydrocarbons
(Traps and Impingers)
HCN
Ammonia
Aldehydes & Ketones
Hydrogen Sulfide
Exhaust
from
Automobile

Figure 4. Gasoline and diesel engine emissions sampling system

Hydrocarbon analysis of the gaseous sample from the diesel system was continuous using a heated flame ionization detector (HFID). Electronic signal integration used with the HFID provided dilute hydrocarbon concentrations for each run. The gaseous sample was taken directly from the diluted exhaust stream through a heated probe in the dilution tunnel.

In addition, the levels of raw hydrocarbons were recorded continuously on a strip chart recorder for the gasoline cars. These emissions were monitored to provide a better insight into the variability of the HC emissions during a test procedure. The HC emissions were obtained using a Beckman 402 HFID detector operating on either the 1,000 or the 10,000 ppm range.

F. Emission Test Procedures

Four emission test procedures were utilized in this project; a Cold Idle Test, a Hot Idle Test, a Cold Modified New York City Cycle (NYCC) Test, and a Hot Modified NYCC Test. The Cold Idle Test includes a cold start (test is preceded by a 12-20 hour soak period) followed by 5 minutes of idle operation with the vehicle in "drive." The Hot Idle Test consists of a hot start (test is preceded by operation of the vehicle over a 505 second "transient" phase of the Federal Test Procedure and a five minute soak period), followed by 5 minutes of idle operation with the vehicle in "drive."

The Modified NYCC Test, as used in this program, was developed at a meeting with the EPA Project Officer. The test cycle was specifically intended to provide a low-speed driving cycle which simulated vehicle operation in a typical parking garage or other very slow speed vehicle operating conditions. This modified NYCC test cycle consists of the first 360 seconds of the original NYCC (omitting the last 240 seconds entirely) with all vehicle operation between the 145th second and the 240th second, as well as operation between the 276th second and the 315th second of the test cycle replaced by idle operation (Figure 5). Two of these 360-second segments are then driven back-to-back to generate the complete modified NYCC cycle (Figure 6). The resulting vital parameters are 12 minutes in total test duration, an average speed of 4 km/hr, and 68 percent idle operation. Table 4 lists a summary of the parameters for both the original NYCC and the modified NYCC.

TABLE 4. SUMMARY OF DRIVING SCHEDULE PARAMETERS

Schedule	Duration Seconds	Distance Kilometers	Average Speed km/hr	mph
NYCC	599	1.91	11.5	7.1
Modified NYCC	720	0.80	4.0	2.5

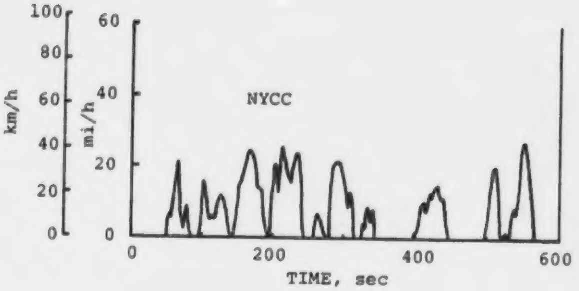

Figure 5. NYCC Driving Cycle

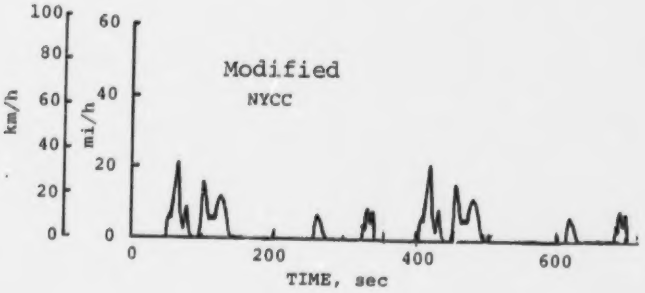

Figure 6. Modified NYCC Driving Cycle As Used In This Program

The Modified Cold NYCC test is preceded by a cold start (vehicle not operated for at least 4 hours, with hood closed) and 30 seconds of idle operation with the vehicle in "drive." This four hour soak period was selected to make the most efficient use of test facilities while allowing as long a soak period as practical for a cold test. Inasmuch as the intention was to simulate parking garage operation, the four hour soak appears sufficient. The Hot Modified NYCC test is preceded by a 505 second transient phase of the Federal Test Procedure (FTP) and 30 seconds of idle operation with the vehicle in "drive."

The test sequence followed for each automobile is given in Table 5. The sequence followed in the laboratory for running one set of emissions tests (Cold Idle, Hot Idle, Cold Modified NYCC and Hot Modified NYCC) is given in Table 6.

TABLE 5. TEST SEQUENCE FOR EACH AUTOMOBILE EVALUATED

Sequence	Operation Performed on Each Vehicle
Upon Receipt	Drain and fill with test fuel, install and leak-check exhaust adapter, tune vehicle to manufacturer's specifications. Precondition with 2 Urban Dynamometer Driving Schedules (UDDS).
1	Run Cold Idle, Hot Idle, Cold Modified NYCC, Hot Modified NYCC. Sample and analyze emissions.
2	Run Cold Idle, Hot Idle, Cold Modified NYCC, Hot Modified NYCC. Sample and analyze emissions.[a]
3	Modify to operate in a malfunction condition. Precondition with UDDS cycle.[b]
4	Run Cold Idle, Hot Idle, Cold Modified NYCC, Hot Modified NYCC. Sample and analyze emissions.
5	Run Cold Idle, Hot Idle, Cold Modified NYCC, Hot Modified NYCC. Sample and analyze emissions.[c]
6	Return to unmodified condition.

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[a] Car 95 was run over three replicate Cold Idle, Hot Idle, Cold Modified NYCC, and Hot Modified NYCC sequences.

[b] Car 92 was not run in a malfunction configuration.

[c] Cars 93, 94 and 95 were run over three replicate Cold Idle, Hot Idle, Cold Modified NYCC, and Hot Modified NYCC sequences.

TABLE 6. LABORATORY TEST SEQUENCE

1. Precondition, UDDS
2. Soak 12-20 hours
3. Cold Start Idle - 5 minutes (Sample)
4. $\left.\begin{array}{l}\text{Run 505 of FTP}\\ \text{Soak 5 minutes}\end{array}\right\}$ Change bubblers, filters, etc.
5. Hot Start Idle - 5 minutes (Sample)
6. $\left.\begin{array}{l}\text{Run 505 of FTP}\\ \text{Idle 30 seconds}\end{array}\right\}$ Change bubblers, filters, etc.
7. Modified NYCC - 12 minutes (Sample)
8. $\left.\begin{array}{l}\text{Run 505 of FTP}\\ \text{Soak 4 hours}\end{array}\right\}$ Change bubblers, filters, etc.
9. Cold Start Idle - 30 seconds
10. Modified NYCC - 12 minutes (Sample)

G. Test Number System

The numbering system used in this project consists of three digits plus a test abbreviation. The designation used for all automobile testing was "VVT", followed by the individual test abbreviation, Cold Idle, Hot Idle, Cold Modified NYCC, or Hot Modified NYCC. The meaning of each letter is described as follows:

Code	Description	As Used in This Project
VV	Vehicle Designation	91 thru 96
T	Test Series - Baseline	1 thru 3
	- Malfunction	6 thru 8

H. Computational Methods

The methods used for calculating the unregulated emissions results are given in Appendix A. All regulated emissions were calculated using methods prescribed in the Code of Federal Regulations for Light-Duty Vehicles,(10) with the exception that the emission and fuel consumption values are calculated per unit time instead of per unit distance. The sample time in minutes was used in place of distance in kilometers in the calculations. On the computer printouts for the regulated emissions (Appendix D), all items of potential interest are identified by descriptive headings. Items on the computer sheet identified only by abbreviated headings are used in calculating the unregulated emissions.

III. ANALYTICAL PROCEDURES FOR UNREGULATED EMISSIONS

The analytical procedures used to measure the unregulated emissions are summarized in this section. Detailed descriptions for several of the procedures, along with discussion of their development, validation, and qualification, are available in the EPA reports, "Analytical Procedures for Characterizing Unregulated Pollutant Emissions from Motor Vehicles"(8) and "Analytical Procedures for Characterizing Unregulated Emissions from Vehicles Using Middle-Distillate Fuels."(9)

A. Description of the Analytical Procedures

The unregulated emissions evaluated in this project, along with the methods for sampling and the procedures used in the analysis, are listed in Table 7. The aldehydes and ketones represent a group of compounds.

TABLE 7. SAMPLING AND ANALYSIS METHODOLOGY FOR UNREGULATED EMISSIONS

Compound	Sampling	Method of Analysis
Ammonia (NH_3)	Impinger	Ion Chromatograph.
Aldehydes & Ketones	Impinger	Dinitrophenylhydrazone derivative. Liquid Chromatograph with ultraviolet detector.
Total Cyanide [Hydrogen Cyanide (HCN) and Cyanogen (C_2H_2)]	Impinger	Cyanogen chloride derivative. Gas Chromatograph with electron capture detector (GC-ECD).
Particulates	Filter	Weighed using microbalance.
Hydrogen Sulfide (H_2S)	Impinger	Methylene blue derivative. Spectrophotometer.
Sulfate	Filter	Barium chloranilate derivative (BCA). Liquid Chromatograph with ultraviolet detector.

This procedure separates and identifies a number of individual aldehydes and ketones within the group. The analytical procedures involved in this project are briefly described as follows:

Ammonia - Ammonia in CVS-diluted automotive exhaust is measured in the protonated form, NH_4^+, after collection in dilute H_2SO_4. The acidification is carried out in a glass impinger maintained at ice bath temperature. A sample from the impinger is then analyzed for ammonia in an Ion Chromatograph and the concentration in the exhaust is calculated by comparison to an ammonium sulfate standard solution.

Aldehydes and Ketones - The collection of aldehydes (formaldehyde, acetaldehyde, acrolein, propionaldehyde, crotonaldehyde, benzaldehyde, isobutyraldehyde and hexanaldehyde) and ketones (acetone and methylethylketone) is accomplished by bubbling CVS-diluted exhaust through glass impingers containing 2,4-dinitrophenylhydrazine (DNPH) in dilute hydrochloric acid. The aldehydes and ketones (also known as carbonyl compounds) react with the DNPH to form their respective phenylhydrazone derivatives. These derivatives are insoluble or only slightly soluble in the DNPH/HCl solution and are removed by filtration followed by pentane extractions. The filtered precipitate and the pentane extracts are combined, and then the pentane is evaporated in a vacuum oven. The remaining dried extract contains the phenylhydrazone derivatives. The extract is dissolved in a quantitative volume of methanol, and a portion of this dissolved extract is injected into a liquid chromatograph and analyzed for several individual aldehydes and ketones using an ultraviolet detector.

Total Cyanide (Hydrogen Cyanide plus Cyanogen) - The collection of total cyanide is accomplished by bubbling CVS-diluted exhaust through glass impingers containing a 1.0 N potassium hydroxide absorbing solution. This solution is maintained at ice bath temperature. An aliquot of the absorbing reagent is then treated with KH_2PO_4 and Chloramine-T. A portion of the resulting cyanogen chloride is injected into a gas chromatograph equipped with an electron capture detector (ECD). External CN^- standards are used to quantify the results.

Particulate - The "particulate" is collected on a 47 mm Fluoropore filter. The amount of "particulate" collected is determined by weighing the filter on a microbalance before and after sampling.

Hydrogen Sulfide - The collection of hydrogen sulfide is accomplished by bubbling CVS-diluted exhaust through glass impingers containing a buffered zinc acetate solution which traps the sulfide ion as zinc sulfide. The absorbing solution is then treated with N-N-dimethyl-paraphenylene diamine sulfate and ferric ammonium sulfate. Cyclization occurs, forming the highly colored heterocyclic compound methylene blue (3,9-bisdimethylaminophenazothionium sulfate). The resulting solution is analyzed with a spectrophotometer at 667 nm in a 1-cm or 4-cm pathlength cell, depending upon the concentration.

Sulfate - Automotive exhaust is piped into a dilution tunnel, where it is mixed with a flowing stream of filtered room air. In the tunnel, the SO_3 reacts rapidly with water in the exhaust to form sulfuric acid aerosols. The aerosols grow to a filterable size range within the tunnel and are collected on a fluorocarbon membrane filter. Particulate sulfate salts are also collected on the filter.

Sulfuric acid collected on the filter is then converted to ammonium sulfate by exposure to ammonia vapor. The soluble sulfates are leached from a filter with a measured volume of an isopropyl alcohol - water solution (60% IPA). A fixed volume of the sample extract is injected into a high pressure liquid chromatograph (HPLC) and pumped through a column of strong cation exchange resin in Ag^+ form to scrub out the halides (Cl^-, Br^-), and then through a column of strong cation exchange resin in H^+ form to scrub out the cations and convert the sulfate to sulfuric acid. Passage through a reactor column of barium chloranilate crystals precipitates out barium sulfate and releases the highly UV absorbing chloranilate ions. The amount of chloranilate ions released is proportional to the sulfate in the sample and is measured by a sensitive liquid chromatograph UV detector at 310-313 nanometers. All the reactions and measurements take place in a flowing steam of 60% IPA. The scrubber and reactor columns also function as efficient filter media for any solid reaction products formed during passage of the sample through the column system.

B. Validation and Qualification of the Analytical Procedures

Several of the procedures used in this project were subjected to a series of validation and qualification experiments in previous projects. Validation experiments included checks for sample stability, sample collection efficiency, detector linearity, interferences, and analysis repeatability. Qualification experiments included the injection of the compound of interest into the tunnel with and without the presence of exhaust and the subsequent recovery of that compound at the procedure sampling point.

Sample stability checks were performed using repeated analyses of the same sample at intervals over a specified period of time, and comparing the results to the initial analysis. Aldehydes and ketones, ammonia, and total cyanide samples were found to be stable for several days. Hydrogen sulfide samples were found to be stable for approximately one day.

Sample collection efficiency experiments were performed by passing a known concentration of sample through a series of impingers or traps and analyzing each impinger or trap individually for the compound of interest. All of these procedures used in this project had a collection efficiency of 98% or better. Detector linearity experiments were performed by preparing several samples of various known concentrations and plotting the resulting peak areas versus the concentrations. The procedures had linear response over the range of interest in this project.

To determine interferences from other compounds, for each procedure, known exhaust components were introduced into the sample to determine their effect on the resultant measurements. To determine analysis repeatability, several samples of known concentrations were prepared and a number of complete analyses were performed at each concentration. The results of these tests were then compared to determine analysis repeatability.

The qualification experiments were performed to determine if the compounds of interest could travel the length of the dilution tunnel in the presence of dilute automobile exhaust without significant loss by reaction with exhaust or the tunnel itself. The compounds were introduced at the same point at which the exhaust enters the tunnel and were sampled at the normal sampling point. Table 8 lists the procedures for which validation and qualification experiments have been performed.

TABLE 8. PROCEDURAL VALIDATION AND QUALIFICATION

Compound or Compound Group	Validation Conducted	Qualification Conducted
Ammonia	Yes	Yes (significant tunnel losses)
Aldehydes and Ketones	Yes	Yes
Total Cyanide	Yes	Yes
Particulate	No[a]	No[a]
Hydrogen Sulfide	Yes	Yes
Sulfate	No[a]	No[a]

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[a] Established procedure

C. Accuracy of the Analytical Procedures

A difficult, but very important, endeavor was the determination of procedural accuracy for each analytical method. The primary difficulty involved those procedures in which the exhaust compounds are trapped or absorbed, an extraction or subsequent reaction is performed, and then a portion of the extract is analyzed. After much consideration, in previous unregulated emission projects, the decision was reached to initially define the accuracy in terms of a "minimum detection value" (MDV). The MDV, as used in this report, is defined as the value above which it can be said with confidence that the compound has been detected in the exhaust (i.e., at a measured value equal to the MDV, the accuracy is equal to plus or minus the MDV). Determination of accuracy over the entire range of each procedure was beyond the scope of these projects.

For compounds collected by bag samples, the MDV was determined from the instrument detection limits only, and is independent of the sampling rate and duration. For compounds which are concentrated in impingers or traps, the MDV is dependent on the instrument detection limit, chemical workup, sampling rate and sampling duration. The MDV's listed in Tables 9 and 10 were derived using the listed sampling rate and a 12-minute sampling period which is representative of the normal test duration used in this program.

TABLE 9. EMISSION PROCEDURAL SAMPLE RATES AND ACCURACY

	Mol. Weight	Sample Flow ℓ/min	$\mu g/m^3$ per ppm	Procedural Minimum Detection Values[a]		MDV for Mod. NYCC mg/min[b]
				ppm	$\mu g/m^3$	
Regulated Emissions						
Hydrocarbons (THC)	11.88	Bag	575	1.0[c]	575	10
Carbon Monoxide	28.01	Bag	1165	2.0[c]	2330	20
Oxides of Nitrogen	46.01	Bag	1915	0.5[c]	958	10
Particulates						
Total Particulates	--	14.0	--	--	<50	<1
Sulfate	96.01	14.0	4000	<0.01	6	0.05
Compound Group Totals						
Aldehydes & Ketones	--	4.0	--	--	--	~0.3
Other Compounds						
Ammonia	17.03	4.0	710	0.01	7	0.06
Cyanide & Cyanogen	26.02	4.0	1080	0.01	11	0.10
Hydrogen Sulfide	34.08	4.0	1415	0.01	14	0.10

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[a] Based on a 12-minute sampling period at the specified flowrate for all impinger and filter collected samples.

[b] Based on $\mu g/m^3$ in the diluted exhaust and typical modified NYCC parameters (720 seconds, 108 m^3 CVS flow, 0.96 DSFC).

[c] Based on the lowest instrument ranges used in this project.

TABLE 10. ALDEHYDE EMISSION PROCEDURAL ACCURACY

				Procedural Minimum Detection Values[a]		
	Mol. Weight	CRC Synonym[c]	$\mu g/m^3$ per ppm	ppm	$\mu g/m^3$	MDV for Mod. NYCC mg/min[b]
Aldehydes and Ketones						
Formaldehyde	30.03	--	1250	0.01	15	0.1
Acetaldehyde	44.05	--	1830	0.01	20	0.2
Acrolein	56.07	propenal	2330	0.01	25	0.2
Propionaldehyde	53.08	propanal	2415	0.01	25	0.2
Acetone	58.08	2-propanone	2415	0.01	25	0.2
Crotonaldehyde	70.09	2-butenal	2915	0.01	30	0.3
Isobutyraldehyde	72.11	2-methylpropanal	3000	0.01	30	0.3
Methylethylketone	72.11	2-butanone	3000	0.01	30	0.3
Benzaldehyde	106.13	--	4415	0.01	45	0.4
Hexanaldehyde	100.16	hexanal	4165	0.01	40	0.4

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[a] Based on a 12-minute sampling period at the specified flowrate for all impinger and filter collected samples

[b] Based on $\mu g/m^3$ in the diluted exhaust and typical modified NYCC parameters (720 seconds, 108 m^3 CVS flow, 0.96 DSFC).

[c] Handbook of Chemistry and Physics, 54th Edition

IV. CAR SELECTION AND TESTING

Regulated and unregulated exhaust emissions from six cars were measured at idle and low speed operation. The six cars were selected to provide a cross section of current vehicle emission control systems. The cars were tested while operating at manufacturer's specifications and under malfunction conditions. This section describes the selection and evaluation of these cars and presents the test results.

A. Car Selection

The cars tested in this program (Table 11) were either rented locally or obtained through the EPA Project Officer. Two of the cars, the Ford Fairlane and the Volkswagen Rabbit, had been used in previous EPA projects. Each car used in the program was selected, with the Project Officer's approval, from the emission control system categories listed below.

Number of Vehicles	Emission Control System
1	Non-catalyst Baseline (1970 Model Year)
1	Oxidation Catalyst w/air injection
1	Oxidation Catalyst w/o air injection
2	Three-way Catalyst
1	Diesel

These categories represent a representative cross section of vehicle/emission control technologies found on light-duty vehicles.

B. Malfunction Conditions Evaluated

Five of the six cars tested in this program were tested while operating under malfunction conditions. These cars and their respective malfunctions are listed in Table 12. It was originally planned to evaluate all five cars at "rich best idle" (idle mixture adjusted to produce highest engine speed at idle) in conjunction with an additional malfunction where applicable, however, for two of the cars, the "rich best idle" configuration was not attainable without considerable additional effort.

The carburetor on the Mercury Zephyr was designed to be nonadjustable, therefore the "rich best idle" condition for the Zephyr was not possible without defeating the purpose of the factory installed equipment. After consulting with the Project Officer, a disabled air pump was selected as an alternative malfunction. When an attempt was made to set the carburetor on the Chevrolet Nova for "rich best idle" operation, only a slightly richer configuration than the baseline could be obtained. Upon close examination of the carburetor, it appeared to have been rebuilt at some time prior to this program. This rebuilt configuration made it impossible

TABLE 11. CARS SELECTED FOR TESTING

Car No.	Car	Engine CID/Cyl	Emission Control System	Comment
91	1970 Ford Fairlane	302/8	Non-Catalyst Baseline	Tested in a previous EPA project as Car 74(4)*
92	1981 Oldsmobile Delta 88	350/8	Diesel	Rented locally
93	1982 Mercury Zephyr	200/6	Three-way catalyst	Rented locally
94	1981 Volkswagen Rabbit	105/4	Three-way catalyst with closed loop fuel system	Tested in a previous EPA project as Car 85(7)
95	1980 Buick Century	231/6	Oxidation Catalyst w/air pump	Rented locally
96	1978 Chevrolet Nova	250/6	Oxidation Catalyst	Rented locally

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*Number in parentheses indicates reference at end of report.

to achieve "rich best idle." One set of emissions tests was run at this "richer idle" configuration and no major differences were found between the baseline and the "richer idle" configurations. After consulting the Project Officer, it was decided that no additional malfunction evaluations would be performed on the Nova.

The Ford Fairlane, the Volkswagen Rabbit, and the Buick Century were all run at the "rich best idle" setting. The Rabbit and the Century were evaluated with a second malfunction in conjunction with the "rich best idle". The Rabbit was evaluated with a disabled oxygen sensor (disconnected electrical connection), and the Century was evaluated with a disabled air pump (disconnected air hose with check valve inlet plugged).

TABLE 12. MALFUNCTION CONDITIONS EVALUATED

Car	Car No.	Malfunction
Ford Fairlane	91	Rich Best Idle
Mercury Zephyr	93	Disabled Air Pump
Volkswagen Rabbit	94	Rich Best Idle plus Disabled Oxygen Sensor
Buick Century	95	Rich Best Idle plus Disabled Air Pump
Chevrolet Nova	96	Richer Idle[a]

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[a] Rich Best Idle not attainable

C. Car Testing

The six cars tested in this program were evaluated over the test matrix shown in Table 13. As can be seen in the table, only selected unregulated emissions were evaluated for each car. The emissions selected were based on emissions results obtained from previous EPA unregulated emission programs for the various emission control systems. With the exception of the Chevrolet Nova, each set of emission tests (includes Cold Idle, Hot Idle, Cold Modified NYCC, and Hot Modified NYCC tests) was conducted in duplicate or triplicate for each car. All cars, with the exception of the Oldsmobile Delta 88, were run in a baseline configuration and under a malfunction condition.

D. Regulated and Unregulated Emission Test Results

Summaries of the test results are included in Appendices B and C. Appendix B presents a summary of the regulated emissions in grams per minute, fuel consumption in liters per 100 minutes, and the unregulated emissions in milligrams per minute, for all four types of emission tests. Appendix C presents a summary of the regulated emissions in grams per

TABLE 13. PROJECT TEST MATRIX

Baseline Configuration

Car	Fairlane	Delta 88	Zephyr	Rabbit	Century	Nova[a]
Car No.	91	92	93	94	95	96
Emissions	Number of Evaluations					
Regulated (HC,CO,NO_x)	2	2	2	2	3	2
Fuel Consumption	2	2	2	2	3	2
Sulfate	2	2			3	
Particulate[b]	2	2			3	
Hydrogen Cyanide	2		2	2		2
Ammonia	2		2	2		2
Hydrogen Sulfide	2		2	2		2
Aldehdyes & Ketones	2	2	2	2	3	2

Malfunction Configuration

	Fairlane	Delta 88	Zephyr	Rabbit	Century	Nova[c]
Regulated (HC,CO,NO_x)	2		3	3	3	1
Fuel Consumption	2		3	3	3	1
Sulfate	2				3	
Particulate					3	
Hydrogen Cyanide	2		2	3		1
Ammonia	2		2	3		1
Hydrogen Sulfide	2		3	3		1
Aldehydes & Ketones	2		3	3	3	1

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[a] An additional Cold Idle Test was run due to variability in emissions data.

[b] The Fluoropore filters used to collect sulfate were weighed before and after sampling to provide total particulate emissions. Pallflex filters are normally used to determine particulate emissions.

[c] One additional cold and one additional hot modified NYCC test were run.

kilometer, fuel consumption in liters per 100 kilometers, and the unregulated emissions in milligrams per kilometer for the modified NYCC emission tests. The computer printouts for the regulated emissions are included in Appendix D. Regulated emissions are listed on the computer printouts in grams per minute for the idle tests, and in both grams per minute and grams per kilometer for the modified NYCC tests. Fuel consumption is presented in a similar manner, liters per 100 minutes for the idle and modified NYCC tests, and liters per 100 kilometers for the modified NYCC tests. The analyses and discussion of these test results are included in Section V of this report.

In the summary data tables, dashes (--) have been used when no test data were available. This occurs for the unregulated emissions when valid test data could not be obtained due to instrument malfunction or loss of the sample. Blanks are left in the tables where the analyses were excluded in accordance with the program scope of work.

E. Other Testing

Additional emission tests were conducted on the Ford Fairlane and the Chevrolet Nova. These tests included: 30 second cold start idle tests for the Fairlane and Nova, additional hot modified NYCC tests at elevated inertia weight settings for the Fairlane and Nova, and additional Cold Idle - Rich Best Idle configuration tests for the Fairlane.

The 30 second cold start idle test consists of taking a grab sample during the entire first 30 seconds of the Cold Idle test. These tests were performed to determine the extent of differences in emissions between the first 30 seconds of cold start operation and the entire 5 minute Cold Idle test. The results for the 30 second cold idle tests are presented in Table 14 along with the results for the corresponding regular Cold Idle tests. Computer printouts for these additional tests can be found in Tables E-1 and E-2 of Appendix E.

Both the Ford Fairlane and the Chevrolet Nova gave higher hydrocarbon emissions in the 30 second tests than in the Cold Idle tests, reflecting the starting of the vehicle. However, for the Fairlane, the fuel consumption rate and the carbon monoxide emissions were lower in the 30 second test than in the Cold Idle test; while the reverse was found to be the case for the Chevrolet Nova. Both cars had low NO_x emissions in the 30 second test. Ammonia was the only unregulated emission analyzed in the 30 second test for the Fairlane. The ammonia emission rate, 3.14 g/min, was considerably lower than the ammonia emission rate for the complete five minute Cold Idle test, 29.89 mg/min. These differences may be due to the fact that the ammonia sample is first collected in a Tedlar bag during the 30 second test, and then bubbled through impingers to concentrate the sample. It is possible that a major portion of the sample could have been lost on the walls of the sample bag. Aldehydes and ketones were the only unregulated emissions evaluated in the 30 second Nova testing. The aldehydes and ketones from the two tests, 30 second and Cold Idle, differ considerably. Once again this may be due to sample losses during collection of the exhaust in the 30 second test. The methylethylketone emissions for the 30 second test may be directly related to the high hydrocarbon emissions.

TABLE 14. THIRTY SECOND COLD IDLE TESTING

	Ford Fairlane		Chevrolet Nova	
	Cold Idle First 30 Seconds of Test 917	Cold Idle Test 917	Cold Idle First 30 Seconds of Test 963	Cold Idle Test 963
Hydrocarbons, g/min	2.36	1.20	7.34	3.87
Carbon Monoxide, g/min	6.67	20.30	77.89	27.59
Oxides of Nitrogen, g/min	0.09	0.10	0.03	0.85
Fuel Cons., ℓ/100 min	4.01	6.45	9.05	8.33
Ammonia, mg/min	3.14[a]	28.89		
Total Aldehydes & Ketones, mg/km			5.6[a]	2.9
Formaldehyde, mg/min			ND	0.47
Acrolein, mg/min			ND	ND
Methylethylketone, mg/min			5.58[a]	0.27
Benzaldehyde, mg/min			ND	2.13

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[a] Data may be erronous due to the necessity of using a different unvalidated sampling protocol for this 30 second sample.

The additional Hot Modified NYCC tests for the Fairlane and Nova consisted of operating the cars over the cycles at an inertia weight approximately 25 percent higher than the normal inertia weight setting (4875 pounds instead of 4000 pounds). The elevated inertia weight tests were run to simulate a vehicle ascending a parking garage ramp, and to compare the resulting emissions to those from the normal tests. The results for the Hot Modified NYCC tests with increased vehicle inertia weight along with the results for the regular Hot Modified NYCC tests are presented in Table 15. Computer printouts for the elevated inertia weight tests are included in Tables E-3 and E-4 of Appendix E.

TABLE 15. HOT MODIFIED NYCC ELEVATED INERTIA WEIGHT TESTING

	Ford Fairlane		Chevrolet Nova	
Test Result	Test 917 Inertia 4875 lbs	Test 917 Inertia 4000 lbs	Test 967 Inertia 4875 lbs	Test 967 Inertia 4000 lbs
Hydrocarbons, g/min	0.62	0.57	0.24	0.27
Carbon Monoxide, g/min	17.52	16.82	0.25	0.27
Oxides of Nitrogen, g/min	0.26	0.18	0.22	0.21
Fuel Cons., ℓ/100 km	5.40	5.23	3.83	3.81
Sulfate, mg/min	ND	ND		
Hydrogen Sulfide, mg/min	ND	ND	ND	ND
Cyanide, mg/min	0.08	1.57	0.53	0.47
Ammonia, mg/min	17.23	6.66	--	6.22
Aldehydes & Ketones, mg/min	1.0	1.0	3.2	2.9
Formaldehyde, mg/min	ND	ND	1.74	1.30
Acrolein, mg/min	ND	ND	ND	ND

For the Ford Fairlane, the additional Hot Modified NYCC test (inertia weight of 4875 pounds), with the exception of the cyanide and ammonia emissions, gave only slightly higher emissions and fuel consumption than the 4000 pound inertia test. However, the ammonia emission rate for the 4875 pound inertia test was similar to a second 4000 pound inertia test conducted on a different test day (16.51 mg/min). For the Chevrolet Nova, the two Hot Modified NYCC tests gave almost identical emissions, indicating little or no difference in emissions due to the increased inertia weight setting for the vehicle.

During the Cold Idle - Rich Best Idle Configuration tests and the Cold Modified NYCC - Baseline Configuration tests, the choke on the Ford Fairlane was apparently operational for different periods of time resulting in varying levels of emissions and fuel consumption. Two additional Cold Idle - Rich Best Idle Configuration tests, tests 918 and 919, were performed (no unregulated emissions) to determine the predominant choke operation. The results of these tests along with the original two Cold Idle tests (916 and 917) are as follows:

Test Result	Test 916	Test 917	Test 918	Test 919
HC, g/min	1.96	1.20	2.43	1.35
CO, g/min	48.78	20.30	52.02	18.48
NO_x, g/min	0.72	0.10	0.67	0.17
Fuel Cons., g/min	12.09	6.45	12.30	7.17

The disparity in these results indicates the reality of the Cold Idle - Rich Best Idle emission variations and the variability of the choke operation in this automobile. The computer printouts for Cold Idle tests 918 and 919 are included as Tables E-5 and E-6 in Appendix E.

V. ANALYSES OF THE RESULTS

This section reports the analyses performed on the emissions data generated in this project. The analyses involved averaging and reformatting the data to enable making various comparisons. Due to the very limited number of data points for each pollutant at each specific condition, advanced statistical analyses were judged to be inapplicable. In addition to presenting the data in formats that enable ready review and comparisons, these results are also compared with results obtained in several previous related projects.

A. Regulated Emissions and Fuel Consumption

The initial analyses of the data involved averaging the results for the duplicate or triplicate baseline and malfunction tests. These averages are included with the individual test data in Appendices B and C. A summary of the average regulated emissions (in g/min) and fuel consumption (in ℓ/100 min) data is presented in Table 16. In general, the test data in Table 16 indicate higher emissions and fuel consumption rates for the Cold Idle and Cold Modified NYCC tests as compared to their hot operation counterparts, and higher emissions and fuel consumption rates during malfunction operation compared to baseline operation. Malfunction operation significantly increased carbon monoxide emissions (increases occurred in 17 of the possible 20 test situations) from an overall program average of 5.35 g/min to 18.5 g/min. Increases in hydrocarbons (13 of 20 tests, from 0.79 to 0.86 g/min) and NO_x (11 of 20 tests, from 0.10 to 0.24) were not as consistent. While repeat hot operation tests showed little test-to-test variability in emissions, the Cold Idle and Cold Modified NYCC tests revealed a much greater degree of variability in the emissions. This variability was apparently due to inconsistencies in the choke operation, as discussed in Section IV.

B. Aldehyde and Ketone Emissions

Ten individual aldehydes and ketones were evaluated in this program: Formaldehyde, acetaldehyde, acrolein, propionaldehyde, acetone, crotonaldehyde, isobutyraldehyde, methylethylketone, benzaldehyde, and hexanaldehyde. The 2,4-dinitrophenylhydrazine absorbing reagent purchased for use in this program was found to contain significant amounts of acetone-DNPH derivatives. These levels prevented accurate measurements of exhaust acetone concentrations. Average emission results are summarized for the remaining nine aldehydes and ketones, as well as the total aldehydes and ketones, in Table 17. Program averages (all test points) for the aldehydes ranged from 0.03 mg/min for acrolein to 0.95 mg/min for methylethylketone. While one or more of the aldehydes or ketones were found in 99 percent of the samples analyzed, the individual aldehydes were detected less frequently, (in 12 percent of the samples for acrolein to 87 percent for methylethylketone). The highest individual aldehyde

TABLE 16. SUMMARY OF THE AVERAGE REGULATED EMISSIONS AND FUEL CONSUMPTION DATA

	HC (g/min)		CO (g/min)		NO_x (g/min)		Fuel Consumption (ℓ/100 min)	
	Baseline	Malfunction	Baseline	Malfunction	Baseline	Malfunction	Baseline	Malfunction
				Cold Idle				
Car 91	1.95	1.58	46.48	34.54	0.70	0.41	11.78	9.27
Car 92	0.17	a	0.39		0.20		3.59	
Car 93	0.55	1.66	5.67	29.21	0.57	0.97	7.78	9.08
Car 94	0.33	1.02	2.60	31.63	0.11	0.03	2.91	3.96
Car 95	1.49	1.37	1.89	47.81	0.26	0.11	5.43	8.26
Car 96	3.03	1.75	26.56	23.91	0.77	0.86	8.35	8.14
				Hot Idle				
Car 91	0.25	0.58	0.57	17.56	0.08	0.06	4.06	4.49
Car 92	0.17		0.38		0.19		3.25	
Car 93	0.46	0.50	3.54	4.22	0.08	0.10	2.19	2.24
Car 94	0.01	0.76	0.02	28.31	0.05	0.02	2.06	3.17
Car 95	0.34	0.56	0.02	11.34	0.02	0.14	2.38	3.79
Car 96	0.40	0.27	0.07	0.07	0.05	0.08	2.63	3.10
				Cold Modified NYCC				
Car 91	0.64	0.87	9.75	19.45	0.22	0.18	6.28	5.92
Car 92	0.25		0.49		0.19		3.84	
Car 93	0.24	0.88	2.16	12.13	0.17	0.22	3.74	3.69
Car 94	0.09	0.91	0.67	30.48	0.12	0.09	2.75	3.88
Car 95	3.68	0.70	1.29	12.58	0.10	0.30	3.68	4.87
Car 96	1.31	0.76	3.68	5.23	0.22	0.34	4.18	4.64
				Hot Modified NYCC				
Car 91	0.29	0.58	1.13	17.24	0.23	0.19	4.82	5.19
Car 92	0.15		0.37		0.19		3.63	
Car 93	0.06	0.62	0.25	6.30	0.15	0.22	2.95	2.93
Car 94	0.01	0.95	0.14	29.76	0.07	0.06	2.35	3.56
Car 95	0.35	0.57	0.28	8.19	0.06	0.36	3.20	4.48
Car 96	0.39	0.27	0.14	0.20	0.12	0.19	3.36	3.76

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[a] Blanks appear in the table where evaluations were excluded in accordance with the program scope of work

TABLE 17. SUMMARY OF ALDEHYDE AND KETONE EMISSIONS

	Program Average, mg/min[a]	Frequency of Detection, Percent	Maximum Emission for Single Condition mg/min[b]	Average for All Test Points One Car, Maximum, mg/min (Car No.)[c]	Increase or Decrease in Emissions as a Result of Malfunction, Car No.[d]	
					Increase	Decrease
Formaldehyde	0.79	69	3.97	1.98 (91)	91,94	95
Acetaldehyde	0.27	53	2.17	0.76 (91)	91,94	93,95,96
Acrolein	0.03	12	0.30	0.07 (91)		91,95
Propionaldehyde	0.09	35	0.54	0.21 (91)	94	91,95
Crotonaldehyde	0.05	18	0.36	0.13 (91)		95
Isobutyraldehyde	0.09	33	0.59	0.23 (91)	94	95
Methylethylketone	0.95	87	2.83	1.47 (94)	93	94,95
Benzaldehyde	0.64	82	2.13	0.92 (91)	91,93,94	
Hexanaldehyde	0.07	20	0.71	0.16 (95)		95
Total Aldehydes and Ketones	2.9	99	9.2	4.7 (91)	91,93,94	95

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[a] Average of the 44 Car-test-configuration values obtained in the program

[b] Maximum value of the 44 car-test-configuration combinations evaluated

[c] Maximum value obtained when averaging all test points for each individual test car

[d] Increase or decrease in three of the four tests (Cold Idle, Hot Idle, Cold Modified NYCC and Hot Modified NYCC) and in the average value for the four tests when comparing the baseline and malfunction conditions

emission rate for an individual car-test-configuration (average of duplicate or triplicate tests) was 3.97 mg/min formaldehyde. This result occurred during the Hot Idle-Rich Best Idle testing of the Ford Fairlane. This car-test-configuration combination also produced the highest levels of acetaldehyde (2.17 mg/min), acrolein (0.30 mg/min), and crotonaldehyde (0.36 mg/min). Overall, Cold or Hot Idle operation produced the highest emission levels for eight of the nine compounds. Of the six test cars, the non-catalyst-equipped Ford Fairlane, Car 91, produced the highest overall average levels for formaldehyde, acetaldehyde, acrolein, propionaldehyde, crotonaldehyde, isobutyraldehyde, benzaldehyde, and total aldehydes and ketones. The Volkswagen Rabbit, Car 94, produced the highest levels of methylethylketone, while the Buick Century produced the highest levels of hexanaldehyde.

In general, malfunction operation, as compared to baseline operation, produced higher aldehyde emissions for Cars 91, 93, and 94, and lower aldehyde emissions for Car 95. The malfunction configuration for Cars 91, 94, and 95 all included the "Rich Best Idle" configuration, but the Car 95 malfunction also included a disconnected air pump. The "Rich Best Idle" condition appears to have increased the aldehydes for Cars 91 and 94, while the disconnected air pump appears to have reversed this trend in Car 95. The malfunction for Car 93 was also a disconnected air pump, however, increases in methylethylketone and benzaldehyde emissions were noted for this car. Acetaldehyde and the remaining aldehydes decreased, to some degree, as was noted for Car 95.

C. Other Unregulated Emissions

The remainder of the unregulated emissions measured in this program include hydrogen sulfide, ammonia, total cyanide, sulfate and particulate. As directed in the scope of work, hydrogen sulfide, ammonia, and cyanide were sampled only for Cars 91, 93, 94, and 96; while sulfate was sampled only for Cars 91, 92, and 95. The Fluoropore filters used to collect sulfate during the baseline operation of Cars 91, 92 and 95, and the malfunction operation of Car 95 were weighed before and after sampling to provide total particulate emission rates. While those rates are not determined in the conventional manner (particulate collected on glass fiber or coated glass fiber filters), they do provide additional information at a minimum cost.

Hydrogen sulfide was not detected in any of the samples analyzed in this program. The minimum detection limit for hydrogen sulfide, as defined in Section III, is 0.10 mg/min. If hydrogen sulfide was present in the exhaust, it was below this level. This result is consistent with previous investigators, who showed that H_2S is only detectable under very specific operating conditions of alternating high speed and idle operation.(14)

A summary of the average ammonia, cyanide, sulfate, and particulate emissions is presented in Table 18. In general, higher ammonia emissions were noted for the idle tests as compared to the modified NYCC tests. Cars 93 and 94, both equipped with three-way catalysts, gave higher baseline ammonia emissions than the non-catalyst-equipped Car 91 and the oxidation catalyst-equipped Car 96. The non-catalyst-equipped Car 91, however, gave the highest ammonia emissions for the program while operating at the malfunctioning "Rich Best Idle" condition. Car 91 was the only car that gave consistently higher ammonia emissions for the malfunction configuration when compared to the baseline configuration.

For total cyanide, the Cold Idle test repeatedly gave higher emission levels than the remaining three tests. All four cars evaluated had higher cyanide emissions for the malfunction configuration than for the baseline configuration. Of the four cars, Car 91 had the highest baseline cyanide emissions during Cold Idle operation, while Car 94 had the highest malfunction cyanide emissions during Hot Modified NYCC operation.

The highest sulfate levels for the three cars evaluated were from Car 92, the Oldsmobile Delta 88 Diesel. Sulfate emissions increased from Car 91 and decreased from Car 95 when the cars were malfunctioning. Particulate emissions, as expected, were highest for Car 92 (Diesel) and lowest for Car 95 (oxidation catalyst with air pump) and intermediate for Car 91 (no catalyst).

D. Comparison of Results with Previous Projects

In Tables 19 through 24, the emission rates of the six cars evaluated in this program have been compared to the emission rates of equivalent or similar cars tested in previous projects.(1,4,7,11) The emissions from previous projects were obtained by operating the cars over the Federal Test Procedure (FTP), and were reported in grams or milligrams per kilometer. These values, g/km or mg/km, have been converted to g/min or mg/min for the FTP to enable comparisons with average emissions (average of Cold Idle, Hot Idle, Cold Modified NYCC and the Hot Modified NYCC emissions) obtained in this program. The conversion to g/min or mg/min for the FTP was made by multiplying the emission rates in g/km by the number of kilometers driven, (12 km) and then dividing by the total time of the test in minutes (22.87 min).

The non-catalyst-equipped Car 91 had lower hydrocarbon, NO_x, particulate, sulfate, and aldehyde emissions at low speed and idle than on the FTP, however, the reverse was observed for the ammonia and cyanide emissions. The Diesel Car 92 had low-speed/idle emissions which were similar to FTP emissions for a 1981 Oldsmobile Cutlass Diesel. The four catalyst-equipped cars (93, 94, 95, and 96), in general, had higher low-speed/idle emissions than equivalent or similar cars operating over the FTP cycle. These higher emissions may be the result of lower catalyst temperatures during the low-speed/idle conditions.

TABLE 18. SUMMARY OF THE AVERAGE AMMONIA, CYANIDE, SULFATE, AND PARTICULATE EMISSIONS

	Ammonia, mg/min		Cyanide, mg/min		Sulfate, mg/min		Particulate, mg/min	
	Baseline	Malfunction	Baseline	Malfunction	Baseline	Malfunction	Baseline	Malfunction
				Cold Idle				
Car 91	8.86	33.86	3.31	2.93	0.00	0.18	41.3	
Car 92	--[a]				1.16		103.5	
Car 93	14.88	12.59	0.79	3.02				
Car 94	22.53	18.66	0.63	2.67				
Car 95					0.43	0.31	16.06	10.94
Car 96	13.53	--[b]	2.60	2.47				
				Hot Idle				
Car 91	6.26	28.39	0.64	1.84	0.00	0.21	35.9	
Car 92					0.51		72.1	
Car 93	26.46	14.99	0.78	2.06				
Car 94	25.56	17.33	0.48	3.70				
Car 95					0.49	0.30	12.06	5.34
Car 96	19.69	18.52	0.42	0.65				
				Cold Modified NYCC				
Car 91	3.81	13.92	0.24	2.12	0.00	0.08	20.0	
Car 92					1.75		103.5	
Car 93	17.52	1.02	0.44	1.68				
Car 94	10.06	8.53	0.46	3.68				
Car 95					0.14	0.16	8.14	4.39
Car 96	7.14	12.94	0.44	0.82				
				Hot Modified NYCC				
Car 91	3.29	11.59	0.07	1.61	0.00	0.11	15.4	
Car 92					0.87		83.2	
Car 93	9.17	6.48	0.15	2.12				
Car 94	9.42	11.24	0.18	4.14				
Car 95					0.17	0.12	7.97	1.49
Car 96	7.16	4.38	0.17	0.42				

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[a] Blanks appear in the table where the analyses were excluded in accordance with the program scope of work

[b] No valid test data obtained

TABLE 19. COMPARISON OF CAR 91 WITH RESULTS FROM PREVIOUS PROJECTS

	Emissions in mg/min, except as noted			
	Car 91 Average Results This Project[a]		Car 91 FTP Results Previous Project[b]	
	Baseline	Rich Best Idle	Unmodified	Rich Best Idle
Regulated Emissions				
Hydrocarbons, g/min	0.78	0.90	1.23	1.97
Carbon Monoxide, g/min	14.51	22.20	6.84	26.27
Oxides of Nitrogen, g/min	0.31	0.21	1.92	1.74
Particulates				
Total Particulates	28.2		50.2	58.65
Sulfate	ND	0.15	0.14	0.24
Other Compounds				
Total Aldehydes & Ketones[c]	3.9	5.5	12.0	11.9
Ammonia	5.56	21.94	2.51	2.48
Cyanide and Cyanogen	1.07	2.13	0.46	1.14
Hydrogen Sulfide	ND	ND	ND	ND
Aldehydes & Ketones				
Formaldehyde	1.55	2.42	11.17	10.55
Acetaldehyde	0.51	1.00	0.75	1.34
Acrolein	0.11	0.02		
Propionaldehyde	0.26	0.19		
Acetone	--	--	0.12	0.03
Crotonaldehyde	0.13	0.12		
Isobutyraldehyde	0.27	0.22		
Methylethylketone	0.32	0.26	ND	ND
Benzaldehyde	0.65	1.18		
Hexanaldehyde	0.12	0.15	ND	ND
	Fuel Consumption (ℓ/100 min)			
	6.70	6.22	8.54	9.45

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[a] Values are average of the four tests conducted in this program, the Cold Idle, Hot Idle, Cold Modified NYCC and Hot Modified NYCC tests.

[b] Average emission rates for Car 91 in unmodified and Rich Best Idle Configurations, Tasks 4 and 5, EPA Contract No. 68-03-2884 (Car 91 was known as Car 74 in Contract 68-03-2884).

[c] Total aldehydes are defined as the sum of formaldehyde, acetaldehyde, acrolein, propionaldehyde, acetone, crotonaldehyde, isobutyraldehyde, methylethylketone, benzaldehyde, and hexanaldehyde as determined by the LC-UV method for this program and as the sum of formaldehyde, acetaldehyde, acetone (includes acrolein and propionaldehyde), methylethylketone and hexanaldehydes as determined by the GC-FID method for the previous work.

TABLE 20. COMPARISON OF CAR 92 WITH RESULTS FROM PREVIOUS PROJECTS

	Emissions in mg/min, except as noted	
	Car 92 Average Results This Program[a]	1981 Olds Cutlass FTP Results Previous Project[b]
Regulated Emissions		
Hydrocarbons, g/min	0.19	0.06
Carbon Monoxide, g/min	0.41	0.34
Oxides of Nitrogen, g/min	0.19	0.34
Particulates		
Total Particulates	90.6	126
Sulfate	1.08	
Total Aldehydes & Ketones[c]	1.9	0.6
Aldheydes & Ketones		
Formaldehyde	ND	0.6
Acetaldehyde	0.31	ND
Acrolein	0.03	
Propionaldehyde	0.11	
Acetone	--	ND
Crotonaldehyde	0.04	
Isobutyraldehyde	0.13	
Methylethylketone	1.18	ND
Benzaldehyde	0.10	
Hexanaldehyde	ND	ND
	Fuel Consumption (ℓ/100 min)	
	3.56	5.61

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[a] Values are average of the four tests conducted in this program, the Cold Idle, Hot Idle, Cold Modified NYCC and Hot Modified NYCC tests.

[b] Average emission rates for a 1981 Diesel Oldsmobile Cutlass. This vehicle has the same engine size as the vehicle used in this program (350 CID/8 Cyl) and was run on the same fuel, EM-329-F, EPA Contract No. 68-02-2703.

[c] Total aldehydes are defined as the sum of formaldehyde, acetaldehyde, acrolein, propionaldehyde, acetone, crotonaldehyde, isobutyraldehyde, methylethylketone, benzaldehyde, and hexanaldehyde as determined by the LC-UV method for this program and as the sum of formaldehyde, acetaldehyde, acetone (includes acrolein and propionaldehyde), methylethylketone and hexanaldehyde as determined by the GC-FID method for the previous work.

TABLE 21. COMPARISON OF CAR 93 WITH RESULTS FROM PREVIOUS PROJECTS

	Emissions in mg/min, except as noted		
	Car 93 Average Results This Project[a]		1981 Ford Escort - FTP Results Previous Project[b]
	Baseline	No Air	
Regulated Emissions			
Hydrocarbons, g/min	0.33	0.92	0.12
Carbon Monoxide, g/min	2.91	12.97	1.41
Oxides of Nitrogen, g/min	0.24	0.38	0.18
Other Compounds			
Total Aldehydes & Ketones[c]	1.5	3.2	0.01
Ammonia	17.01	8.77	
Cyanide & Cyanogen	0.54	2.22	
Hydrogen Sulfide	ND	ND	
Aldehydes & Ketones			
Formaldehyde	0.25	0.31	0.05
Acetaldehyde	0.20	0.15	ND
Acrolein	0.04	ND	
Propionaldehyde	0.03	0.01	
Acetone	--	--	ND
Crotonaldehyde	0.03	ND	
Isobutyraldehyde	0.09	ND	
Methylethylketone	0.33	1.75	ND
Benzaldehyde	0.38	0.95	
Hexanaldehyde	0.08	0.01	ND
	Fuel Consumption (ℓ/100 min)		
	4.17	4.49	5.03

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[a] Values are average of the four tests conducted in this program, the Cold Idle, Hot Idle, Cold Modified NYCC and Hot Modified NYCC tests.

[b] Average emission rates for a 1981 Ford Escort. Vehicle has a smaller engine (1.6 ℓ/4 cyl), but the same emission control system. Tasks 11 and 12, EPA Contract No. 68-03-2884, and Work Assignments 1 and 3, EPA Contract No. 68-03-3073. (The Escort was known as Car 81 in the previous work).

[c] Total aldehydes are defined as the sum of formaldehyde, acetaldehyde, acrolein, propionaldehyde, acetone, crotonaldehyde, isobutyraldehyde, methylethylketone, benzaldehyde, and hexanaldehyde as determined by the LC-UV method for this program and as the sum of formaldehyde, acetaldehyde, acetone (includes acrolein and propionaldehyde), methylethylketone and hexanaldehydes as determined by the GC-FID method for the previous work.

TABLE 22. COMPARISON OF CAR 94 WITH RESULTS FROM PREVIOUS PROJECTS

	Emissions in mg/min, except as noted		
	Car 94 Average Results This Project[a]		Car 94 FTP Results Previous Project[b]
	Baseline	RBI+Disconn O_2 Sensor	
Regulated Emissions			
Hydrocarbons, g/min	0.11	0.91	0.04
Carbon Monoxide, g/min	0.29	30.05	0.35
Oxides of Nitrogen, g/min	0.09	0.05	0.05
Other Compounds			
Total Aldehydes & Ketones[c]	2.4	2.5	ND
Ammonia	16.89	13.94	8.92
Cyanide & Cyanogen	0.44	3.55	0.01
Hydrogen Sulfide	ND	ND	
Aldehydes & Ketones			
Formaldehyde	0.11	0.54	ND
Acetaldehyde	0.06	0.17	ND
Acrolein	ND	ND	
Propionaldehyde	0.08	0.12	
Acetone	--	--	ND
Crotonaldehyde	ND	0.01	
Isobutyraldehyde	0.06	0.08	
Methylethylketone	1.88	1.06	ND
Benzaldehyde	0.18	0.45	
Hexanaldehyde	ND	0.05	ND
	Fuel Consumption (ℓ/100 min)		
	2.52	3.64	5.19

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[a] Values are average of the four tests conducted in this program, the Cold Idle, Hot Idle, Cold Modified NYCC and Hot Modified NYCC tests.

[b] Average emission rates for Car 94, Tasks 11 and 12, EPA Contract 68-03-2884 and Work Assignments 1 and 3 Contract 68-03-3073. (Car 94 was known as Car 85 in Contracts 68-03-2884 and 68-03-3073).

[c] Total aldehydes are defined as the sum of formaldehyde, acetaldehyde, acrolein, propionaldehyde, acetone, crotonaldehyde, isobutyraldehyde, methylethylketone, benzaldehyde, and hexanaldehyde as determined by the LC-UV method for this program and as the sum of formaldehyde, acetaldehyde, acetone (includes acrolein and propionaldehyde), methylethylketone and hexanaldehyde as determined by the GC-FID method for the previous work.

TABLE 23. COMPARISON OF CAR 95 WITH RESULTS FROM PREVIOUS PROJECTS

	Emissions in mg/min, except as noted			
	Car 95 Average Results This Project[a]		1978 Chev. Malibu FTP Results Previous Project[b]	
	Baseline	RBI+No Air	Unmodified	RBI+No Air
Regulated Emissions				
Hydrocarbons, g/min	1.47	0.80	0.10	0.65
Carbon Monoxide, g/min	0.87	19.98	1.13	27.77
Oxides of Nitrogen, g/min	0.11	0.23	0.23	0.15
Particulate				
Total Particulates	11.1	5.5	1.8	8.0
Sulfate	0.31	0.22	0.38	0.38
Total Aldehydes and Ketones[c]	5.3	2.0	0.8	6.0
Aldehydes & Ketones				
Formaldehyde	1.89	0.37	0.63	0.81
Acetaldehyde	0.28	0.13	0.08	1.82
Acrolein	0.10	ND		
Propionaldehyde	0.14	ND		
Acetone	--	--	ND	1.12
Crotonaldehyde	0.12	ND		
Isobutyraldehyde	0.11	ND	ND	ND
Methylethylketone	1.36	0.82	0.03	2.13
Benzaldehyde	0.96	0.62		
Hexanaldehyde	0.30	0.03	0.03	0.18
	Fuel Consumption (ℓ/100 min)			
	3.67	5.35	9.14	9.36

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[a] Values are average of the four tests conducted in this program, the Cold Idle, Hot Idle, Cold Modified NYCC and Hot Modified NYCC tests.

[b] Average emission rates for a 1978 Chevrolet Malibu (305 CID/8 cyl) in unmodified and Rich Best Idle + disconnected air pump configurations, EPA Contract No. 68-03-2499. This car had an oxidation catalyst and an air pump and was known as Car 13 in Contract 68-03-2499.

[c] Total aldehydes are defined as the sum of formaldehyde, acetaldehyde, acrolein, propionaldehyde, acetone, crotonaldehyde, isobutyraldehyde, methylethylketone, benzaldehyde, and hexanaldehyde as determined by the LC-UV method for this program and as the sum of formaldehyde, acetaldehyde, acetone (includes acrolein and propionaldehyde) isobutyraldehyde, methylethylketone and hexanaldehyde as determined by the GC-FID method for the previous work.

TABLE 24. COMPARISONS OF CAR 96 WITH RESULTS FROM PREVIOUS PROJECTS

	Emissions in mg/min, except as noted			
	Car 96 Average Results This Project[a]		1978 Chev. Malibu FTP Results Previous Project[b]	
	Baseline	"Richer Idle"	Unmodified	Rich Best Idle
Regulated Emissions				
Hydrocarbons, g/min	1.24	0.76	0.16	0.57
Carbon Monoxide, g/min	8.15	7.35	2.91	13.65
Oxides of Nitrogen, g/min	0.29	0.37	0.39	0.30
Other Compounds				
Total Aldehydes & Ketones[c]	2.6	1.7	0.9	2.0
Ammonia	12.03	11.95	1.61	9.40
Cyanide & Cyanogen	0.91	1.09	0.31	1.46
Hydrogen Sulfide	ND	ND	ND	0.06
Aldehydes & Ketones				
Formaldehyde	0.71	0.58	0.58	0.69
Acetaldehyde	0.15	0.03	0.16	0.22
Acrolein	ND	ND		
Propionaldehyde	0.05	ND		
Acetone	--	--	0.03	ND
Crotonaldehyde	0.02	0.01		
Isobutyraldehyde	ND	0.01	ND	0.02
Methylethylketone	0.64	0.53	0.03	0.10
Benzaldehyde	1.05	0.52		
Hexanaldehyde	ND	0.02	0.06	0.02
	Fuel Consumption (ℓ/100 min)			
	4.67	4.91	7.20	7.69

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[a] Values are average of the four tests conducted in this program, the Cold Idle, Hot Idle, Cold Modified NYCC and Hot Modified NYCC tests.

[b] Average emission rates for a 1978 Chevrolet Malibu (305 CID/8 cyl) in unmodified and Rich Best Idle configurations, EPA Contract No. 68-03-2499. This car had an oxidation catalyst and was known as Car 12 in Contract 68-03-2499.

[c] Total aldehydes are defined as the sum of formaldehyde, acetaldehyde, acrolein, propionaldehyde, acetone, crotonaldehyde, isobutyraldehyde, methylethylketone, benzaldehyde, and hexanaldehyde as determined by the LC-UV method for this program and as the sum of formaldehyde, acetaldehyde, acetone, (includes acrolein and propionaldehyde), isobutyraldehyde, methylethylketone, and hexanaldehyde as determined by the GC-FID method for the previous work.

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APPENDIX A

CALCULATIONS FOR UNREGULATED EMISSIONS

APPENDIX A. CALCULATIONS FOR UNREGULATED EMISSIONS

This appendix documents the calculational methods used for the unregulated emissions. All values not defined (i.e., CVS FLOW, VOL, etc.) are obtained from the computer printouts for the regulated emissions. Example printout is included as Appendix Table A-1.

A. Calculation of mg/km

$$\text{mg/km} = [(\text{EXH}, \mu g/m^3 \times \text{SCF} - \text{BG}, \mu g/m^3 \times \text{DFC}) \times \text{VOL} \div \text{KM}] \div 1000$$

Calculations were performed using a Hewlett-Packard HP-65 Programmable Calculator.

Dry (DFC) and (SFC) were used for all unregulated emissions. DFC and SFC are obtained from the computer printout for regulated emissions. (See Table A-1).

B. Calculation of mg/min

$$\text{mg/min} = [(\text{EXH}, \mu g/m^3 \times \text{SCF} - \text{BG}, \mu g/m^3 \times \text{DFC}) \times \text{VOL} \div \text{MIN}] \div 1000$$

Calculations performed as in A with the exception of distance in KM being replaced in the equation with time in MIN.

C. Definition of Computer Printout Nomenclature

The following are primarily exerpts taken from the computer program:

```
 C  DFC = DILUTION FACTOR CORRECTION  DFC = FOR WET SAMPLES  DFCD = FOR DRY

    DF(J)=13.4/(  YC2(2,J) +(( YH(2,J) + CC(2,J))/10000.))
    DFC(J) = 1 - 1/DF(J)
```

TABLE A-1. COMPUTER PRINTOUT NOMENCLATURE

```
                                                   VEHICLE EMISSIONS RESULTS -
                                                   PROJECT 05-6619-004

TEST NO.          RUN                         VEHICLE NO.                      TEST WEIGHT       KG(        LBS)
VEHICLE MODEL                                 DATE                             ACTUAL ROAD LOAD      KW(        HP)
ENGINE      L(      CID)                      BAG CART NO.                     GASOLINE
TRANSMISSION                                  DYNO NO.                         ODOMETER        KM(        MILES)
                                              CVS NO.

BARÔMETER         MM HG(        IN HG)        DRY BULB TEMP.     DEG C(     DEG F)
RELATIVE HUMIDITY       PCT                   ABS. HUMIDITY      GM/KG         NOX HUMIDITY CORRECTION FACTOR
BAG RESULTS
   TEST CYCLE                                    H-NY

   BLOWER DIF P MM. H2O(IN. H2O)
   BLOWER INLET P MM. H2O(IN. H2O)
   BLOWER INLET TEMP. DEG. C(DEG. F)
   BLOWER REVOLUTIONS
   TOT FLOW STD. CU. METRES(SCF)
   HC  SAMPLE METER/RANGE/PPM
   HC  BCKGRD METER/RANGE/PPM
   CO  SAMPLE METER/RANGE/PPM
   CO  BCKGRD METER/RANGE/PPM
   CO2 SAMPLE METER/RANGE/PCT
   CO2 BCKGRD METER/RANGE/PCT
   NOX SAMPLE METER/RANGE/PPM
   NOX BCKGRD METER/RANGE/PPM
   DILUTION FACTOR
   HC  CONCENTRATION PPM
   CO  CONCENTRATION PPM
   CO2 CONCENTRATION PCT
   NOX CONCENTRATION PPM
   HC  MASS GRAMS
   CO  MASS GRAMS
   CO2 MASS GRAMS
   NOX MASS GRAMS
   RUN TIME              SECONDS
        DFC, WET (DRY)
        SCF, WET (DRY)
        VOL (SCM)
        SAM BLR (SCM)
        KM  (MEASURED)

   TEST NUMBER,
   BAROMETER,            MM HG
   HUMIDITY,             G/KG
   TEMPERATURE,          DEG C
   CARBON DIOXIDE,       G/KM
   FUEL CONSUMPTION,     L/100KM

   HYDROCARBONS,         G/KM
   CARBON MONOXIDE,      G/KM
   OXIDES OF NITROGEN,   G/KM
```

APPENDIX B

INDIVIDUAL IDLE AND MODIFIED NYCC TEST RESULT SUMMARY TABLES

Emissions Listed in Grams per Minute or
Milligrams per Minute

Fuel Consumption Listed in Liters per One
Hundred Minutes

TABLE B-1. CAR 91 EMISSIONS SUMMARY - 1970 FORD FAIRLANE
BASELINE CONFIGURATION

	Emission Rate, mg/min (Except as Noted)							
	Cold Idle				Hot Idle			
Test Number, VVT	911	912		Average	911	912		Average
Barometer, mm Hg	737.9	736.9		737.4	737.9	736.9		737.4
Humidity, g/kg	12.0	11.0		11.5	12.7	11.0		11.9
Carbon Dioxide, g/min	195.7	196.8		196.3	92.8	94.0		93.4
Fuel Cons., ℓ/100 min	11.65	11.90		11.78	4.03	4.08		4.06
Regulated Emissions								
Hydrocarbons, (THC), g/min	1.91	1.99		1.95	0.25	0.24		0.25
Carbon Monoxide, g/min	45.28	47.87		46.58	0.56	0.58		0.57
Oxides of Nitrogen, g/min	0.70	0.70		0.70	0.08	0.08		0.08
Other Emissions								
Total Particulates	29.4	53.2		41.3	43.8	28.0		35.9
Sulfate	0.00	0.00		0.00	0.00	0.00		0.00
Hydrogen Sulfide	0.00	0.00		0.00	0.00	0.00		0.00
Cyanide	3.31	3.31		3.31	0.50	0.77		0.64
Ammonia	5.51	12.20		8.86	7.11	5.40		6.26
Aldehydes & Ketones	5.7	4.1		4.9	8.5	5.6		7.1
Aldehydes & Ketones								
Formaldehyde	2.96	0.79		1.88	2.06	3.47		2.77
Acetaldehyde	0.93	0.27		0.60	1.12	1.23		1.18
Acrolein	0.20	0.00		0.10	0.60	0.00		0.30
Propionaldehyde	0.38	0.21		0.30	0.80	0.20		0.50
Acetone	--	--		--	--	--		--
Crotonaldehyde	0.23	0.00		0.12	0.71	0.00		0.36
Isobutyraldehyde	0.44	0.21		0.33	0.94	0.00		0.47
Methylethylketone	0.00	1.49		0.75	0.42	0.23		0.33
Benzaldehyde	0.28	1.10		0.69	1.26	0.43		0.85
Hexanaldehyde	0.26	0.00		0.13	0.57	0.00		0.29

TABLE B-1 Cont'd). CAR 91 EMISSIONS SUMMARY - 1970 FORD FAIRLANE
BASELINE CONFIGURATION

		Emission Rate, mg/min (Except as Noted)							
		Cold Modified NYCC				Hot Modified NYCC			
Test Number,	VVT	911	912		Average	911	912		Average
Barometer,	mm Hg	735.6	736.9		736.3	737.9	736.9		737.3
Humidity,	g/kg	11.3	11.0		11.2	11.7	11.0		11.4
Carbon Dioxide,	g/min	129.7	128.6		129.2	110.9	110.2		110.6
Fuel Cons.,	ℓ/100 min	6.72	5.83		6.28	4.83	4.80		4.82
Regulated Emissions									
Hydrocarbons, (THC),	g/min	0.84	0.44		0.64	0.30	0.28		0.29
Carbon Monoxide,	g/min	15.81	3.68		9.75	1.14	1.11		1.13
Oxides of Nitrogen,	g/min	0.20	0.24		0.22	0.24	0.22		0.23
Other Emissions									
Total Particulates		23.4	16.6		20.0	18.8	12.0		15.4
Sulfate		0.00	0.00		0.00	0.00	0.00		0.00
Hydrogen Sulfide		0.00	0.00		0.00	0.00	0.00		0.00
Cyanide		0.31	0.17		0.24	0.13	0.00		0.07
Ammonia		3.61	4.01		3.81	3.53	3.05		3.29
Aldehydes & Ketones		0.5	1.9		1.2	2.2	2.3		2.3
Aldehydes & Ketones									
Formaldehyde		0.04	1.05		0.55	0.82	1.20		1.01
Acetaldehyde		0.09	0.20		0.15	0.09	0.14		0.12
Acrolein		0.00	0.00		0.00	0.08	0.00		0.04
Propionaldehyde		0.00	0.09		0.05	0.06	0.09		0.08
Acetone		--	--		--	--	--		--
Crotonaldehyde		0.00	0.00		0.00	0.10	0.00		0.05
Isobutyraldehyde		0.00	0.07		0.04	0.16	0.07		0.12
Methylethylketone		0.00	0.00		0.00	0.03	0.36		0.20
Benzaldehyde		0.39	0.47		0.43	0.77	0.47		0.62
Hexanaldehyde		0.00	0.00		0.00	0.08	0.00		0.04

TABLE B-2. CAR 91 EMISSIONS SUMMARY - 1970 FORD FAIRLANE
RICH BEST IDLE

		Emission Rate, mg/min (Except as Noted)							
		Cold Idle				Hot Idle			
Test Number,	VVT	916	917		Average	916	917		Average
Barometer,	mm Hg	742.2	739.9		741.1	742.2	739.9		741.1
Humidity,	g/kg	12.4	10.5		11.5	10.9	10.5		10.7
Carbon Dioxide,	g/min	200.2	115.5		157.9	76.6	74.8		75.7
Fuel Cons.,	ℓ/100 min	12.09	6.45		9.27	4.53	4.45		4.49
Regulated Emissions									
Hydrocarbons, (THC),	g/min	1.96	1.20		1.58	0.61	0.55		0.58
Carbon Monoxide,	g/min	48.78	20.30		34.54	17.55	17.57		17.56
Oxides of Nitrogen,	g/min	0.72	0.10		0.41	0.06	0.05		0.06
Other Emissions									
Total Particulates									
Sulfate		0.35	0.00		0.18	0.42	0.00		0.21
Hydrogen Sulfide		0.00	0.00		0.00	0.00	0.00		0.00
Cyanide		4.23	1.63		2.93	2.09	1.69		1.84
Ammonia		38.86	28.89		33.86	48.14	8.64		28.39
Aldehydes & Ketones		8.8	8.2		8.5	11.5	5.1		8.3
Aldehydes & Ketones									
Formaldehyde		3.07	4.13		3.60	4.59	3.35		3.97
Acetaldehyde		1.37	1.44		1.41	4.34	0.00		2.17
Acrolein		0.00	0.18		0.09	0.00	0.00		0.00
Propionaldehyde		0.56	0.51		0.54	0.34	0.00		0.17
Acetone		--	--		--	--	--		--
Crotonaldehyde		0.00	0.37		0.19	0.45	0.00		0.23
Isobutyraldehyde		0.85	0.32		0.59	0.35	0.00		0.18
Methylethylketone		--	--		--	0.00	0.19		0.10
Benzaldehyde		2.96	0.65		1.81	0.89	1.55		1.22
Hexanaldehyde		0.00	0.56		0.28	0.57	0.00		0.30

TABLE B-2 (Cont'd). CAR 91 EMISSIONS SUMMARY - 1970 FORD FAIRLANE
RICH BEST IDLE

		Emission Rate, mg/min (Except as Noted)							
		Cold Modified NYCC				Hot Modified NYCC			
Test Number,	VVT	916	917		Average	916	917		Average
Barometer,	mm Hg	742.4	737.4		739.9	740.2	739.9		740.1
Humidity,	g/kg	10.7	12.3		11.5	10.7	10.5		10.6
Carbon Dioxide,	g/min	105.1	105.5		105.3	90.6	93.7		92.2
Fuel Cons.,	ℓ/100 min	6.16	5.67		5.92	5.15	5.23		5.19
Regulated Emissions									
Hydrocarbons, (THC),	g/min	0.76	0.97		0.87	0.58	0.57		0.58
Carbon Monoxide,	g/min	23.38	15.51		19.45	17.66	16.82		17.24
Oxides of Nitrogen,	g/min	0.19	0.17		0.18	0.19	0.18		0.19
Other Emissions									
Total Particulates									
Sulfate		0.15	0.00		0.08	0.21	0.00		0.11
Hydrogen Sulfide		0.00	0.00		0.00	0.00	0.00		0.00
Cyanide		1.96	2.28		2.12	1.65	1.57		1.61
Ammonia		15.29	12.54		13.92	16.51	6.66		11.59
Aldehydes & Ketones		3.6	4.0		3.8	1.5	1.0		1.2
Aldehydes & Ketones									
Formaldehyde		1.40	2.54		1.97	0.23	0.00		0.12
Acetaldehyde		0.23	0.34		0.29	0.09	0.14		0.12
Acrolein		0.00	0.00		0.00	0.00	0.00		0.00
Propionaldehyde		0.06	0.00		0.00	0.06	0.00		0.03
Acetone		--	--		--	--	--		--
Crotonaldehyde		0.10	0.00		0.05	0.00	0.00		0.00
Isobutyraldehyde		0.13	0.00		0.07	0.03	0.00		0.02
Methylethylketone		0.63	0.25		0.44	0.32	0.15		0.24
Benzaldehyde		1.05	0.91		0.98	0.78	0.66		0.72
Hexanaldehyde		0.00	0.00		0.00	0.00	0.00		0.00

TABLE B-3. CAR 92 EMISSIONS SUMMARY 1981 OLDS DELTA 88
BASELINE CONFIGURATION

		Emission Rate, mg/min (Except as Noted)							
		Cold Idle				Hot Idle			
Test Number,	VVT	921	922		Average	921	922		Average
Barometer,	mm Hg	739.6	741.9		740.8	739.6	741.9		740.8
Humidity,	g/kg	11.9	11.7		11.8	11.9	11.7		11.8
Carbon Dioxide,	g/min	95.0	95.3		95.2	89.9	82.3		86.1
Fuel Cons.,	ℓ/100 min	3.58	3.59		3.59	3.39	3.10		3.25
Regulated Emissions									
Hydrocarbons, (THC),	g/min	0.16	0.18		0.17	0.17	0.16		0.17
Carbon Monoxide,	g/min	0.39	0.39		0.39	0.39	0.37		0.38
Oxides of Nitrogen,	g/min	0.21	0.19		0.20	0.19	0.18		0.19
Other Emissions									
Total Particulates		103.4	103.5		103.5	76.0	68.3		72.1
Sulfate		1.10	1.21		1.16	0.56	0.46		0.51
Hydrogen Sulfide									
Cyanide									
Ammonia									
Aldehydes & Ketones		3.2	2.8		3.0	2.3	2.8		2.5
Aldehydes & Ketones									
Formaldehyde		0.00	0.00		0.00	0.00	0.00		0.00
Acetaldehyde		2.50	0.00		1.25	0.00	0.00		0.00
Acrolein		0.00	0.00		0.00	0.00	0.00		0.00
Propionaldehyde		0.31	0.00		0.16	0.00	0.00		0.00
Acetone		--	--		--	--	--		--
Crotonaldehyde		0.00	0.00		0.00	0.00	0.00		0.00
Isobutyraldehyde		0.37	0.00		0.19	0.00	0.00		0.00
Methylethylketone		0.00	2.79		1.40	2.33	2.76		2.55
Benzaldehyde		0.00	0.00		0.00	0.00	0.00		0.00
Hexanaldehyde		0.00	0.00		0.00	0.00	0.00		0.00

TABLE B-3 (Cont'd). CAR 92 EMISSIONS SUMMARY - 1981 OLDS DELTA 88
BASELINE CONFIGURATION

		Emission Rate, mg/min (Except as Noted)							
		Cold Modified NYCC				Hot Modified NYCC			
Test Number,	VVT	921	922		Average	921	922		Average
Barometer,	mm Hg	737.4	742.4		739.9	739.6	741.9		740.8
Humidity,	g/kg	10.1	10.7		10.4	11.9	11.7		11.8
Carbon Dioxide,	g/min	103.7	99.4		101.6	96.7	96.4		96.6
Fuel Cons.,	ℓ/100 min	3.91	3.76		3.84	3.65	3.61		3.63
Regulated Emissions									
Hydrocarbons, (THC),	g/min	0.26	0.24		0.25	0.15	0.14		0.15
Carbon Monoxide,	g/min	0.49	0.48		0.49	0.38	0.36		0.37
Oxides of Nitrogen,	g/min	0.20	0.17		0.19	0.19	0.19		0.19
Other Emissions									
Total Particulates		97.5	109.5		103.5	84.1	82.2		83.2
Sulfate		1.75	1.75		1.75	0.84	0.89		0.87
Hydrogen Sulfide									
Cyanide									
Ammonia									
Aldehydes & Ketones		0.6	0.7		0.6	1.2	1.9		1.6
Aldehydes & Ketones									
Formaldehyde		0.00	0.00		0.00	0.00	0.00		0.00
Acetaldehyde		0.00	0.00		0.00	0.00	0.00		0.00
Acrolein		0.00	0.00		0.00	0.13	0.13		0.13
Propionaldehyde		0.00	0.00		0.00	0.26	0.27		0.27
Acetone		--	--		--	--	--		--
Crotonaldehyde		0.00	0.00		0.00	0.15	0.15		0.15
Isobutyraldehyde		0.00	0.00		0.00	0.31	0.31		0.31
Methylethylketone		0.36	0.50		0.43	0.00	0.68		0.34
Benzaldehyde		0.20	0.20		0.20	0.20	0.20		0.20
Hexanaldehyde		0.00	0.00		0.00	0.19	0.20		0.20

TABLE B-4. CAR 93 EMISSIONS SUMMARY - 1982 MERCURY ZEPHYR
BASELINE CONFIGURATION

		Emission Rate, mg/min (Except as Noted)							
		Cold Idle				Hot Idle			
Test Number,	VVT	931	932		Average	931	932		Average
Barometer,	mm Hg	741.9	743.5		742.7	741.9	743.5		742.7
Humidity,	g/kg	13.6	11.9		12.8	13.6	10.7		12.2
Carbon Dioxide,	g/min	203.7	139.2		171.5	43.7	44.7		44.2
Fuel Cons.,	ℓ/100 min	9.17	6.38		7.78	2.18	2.20		2.19
Regulated Emissions									
Hydrocarbons, (THC),	g/min	0.55	0.55		0.55	0.46	0.46		0.46
Carbon Monoxide,	g/min	5.87	5.46		5.67	3.74	3.34		3.54
Oxides of Nitrogen,	g/min	0.68	0.46		0.57	0.08	0.07		0.08
Other Emissions									
Total Particulates									
Sulfate									
Hydrogen Sulfide		0.00	0.00		0.00	0.00	0.00		0.00
Cyanide		0.97	0.60		0.79	1.05	0.50		0.78
Ammonia		20.49	9.27		14.88	36.92	16.00		26.46
Aldehydes & Ketones		0.6	3.5		2.1	2.7	1.5		2.1
Aldehydes & Ketones									
Formaldehyde		0.00	0.00		0.00	0.62	0.12		0.37
Acetaldehyde		0.00	0.16		0.08	0.15	0.49		0.32
Acrolein		0.00	0.20		0.10	0.00	0.00		0.00
Propionaldehyde		0.00	0.00		0.00	0.18	0.00		0.09
Acetone		---	---		---	---	---		---
Crotonaldehyde		0.00	0.23		0.12	0.00	0.00		0.00
Isobutyraldehyde		0.00	0.47		0.24	0.21	0.00		0.11
Methylethylketone		0.00	0.95		0.48	1.21	0.24		0.73
Benzaldehyde		0.62	0.92		0.77	0.32	0.62		0.47
Hexanaldehyde		0.00	0.59		0.30	0.00	0.00		0.00

TABLE B-4 (Cont'd). CAR 93 EMISSIONS SUMMARY - 1982 MERCURY ZEPHYR
BASELINE CONFIGURATION

		Emission Rate, mg/min (Except as Noted)							
		Cold Modified NYCC				Hot Modified NYCC			
Test Number,	VVT	931	932		Average	931	932		Average
Barometer,	mm Hg	739.6	738.6		739.1	741.9	743.5		742.7
Humidity,	g/kg	10.5	9.8		10.2	12.6	11.6		12.1
Carbon Dioxide,	g/min	81.7	85.1		83.4	68.7	68.3		68.5
Fuel Cons.,	ℓ/100 min	3.65	3.83		3.74	2.96	2.93		2.95
Regulated Emissions									
Hydrocarbons, (THC),	g/min	0.24	0.24		0.24	0.06	0.05		0.06
Carbon Monoxide,	g/min	1.72	2.59		2.16	0.21	0.29		0.25
Oxides of Nitrogen,	g/min	0.17	0.16		0.17	0.15	0.15		0.15
Other Emissions									
Total Particulates									
Sulfate									
Hydrogen Sulfide		0.00	0.00		0.00	0.00	0.00		0.00
Cyanide		0.34	0.53		0.44	0.23	0.07		0.15
Ammonia		11.48	23.55		17.52	7.24	11.10		9.17
Aldehydes & Ketones		0.8	1.5		1.2	0.7	0.0		0.4
Aldehydes & Ketones									
Formaldehyde		0.25	0.67		0.46	0.30	0.00		0.15
Acetaldehyde		0.18	0.20		0.19	0.38	0.00		0.19
Acrolein		0.00	0.08		0.04	0.00	0.00		0.00
Propionaldehyde		0.06	0.00		0.03	0.00	0.00		0.00
Acetone		---	---		---	---	---		---
Crotonaldehyde		0.00	0.00		0.00	0.00	0.00		0.00
Isobutyraldehyde		0.00	0.00		0.00	0.00	0.00		0.00
Methylethylketone		0.00	0.19		0.10	0.00	0.00		0.00
Benzaldehyde		0.26	0.25		0.26	0.00	0.00		0.00
Hexanaldehyde		0.00	0.00		0.00	0.00	0.00		0.00

TABLE B-5. CAR 93 EMISSIONS SUMMARY - 1982 MERCURY ZEPHYR
NO AIR INJECTION

		Emission Rate, mg/min (Except as Noted)							
		Cold Idle				Hot Idle			
Test Number,	VVT	936	937	938	Average	936	937	938	Average
Barometer,	mm Hg	739.9	741.7	744.7	742.1	739.9	741.7	744.7	742.1
Humidity,	g/kg	11.4	11.9	11.8	11.7	11.4	11.2	11.8	11.5
Carbon Dioxide,	g/min	179.0	124.7	181.3	161.7	45.1	42.9	44.7	44.2
Fuel Cons.,	ℓ/100 min	10.17	6.94	10.14	9.08	2.29	2.08	2.34	2.24
Regulated Emissions									
Hydrocarbons, (THC),	g/min	1.73	1.46	1.80	1.66	0.50	0.48	0.52	0.50
Carbon Monoxide,	g/min	34.21	21.25	32.16	29.21	4.48	2.73	5.45	4.22
Oxides of Nitrogen,	g/min	0.93	0.94	1.03	0.97	0.08	0.11	0.10	0.10
Other Emissions									
Total Particulates									
Sulfate									
Hydrogen Sulfide		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cyanide		1.63	4.41		3.02	2.36	1.76		2.06
Ammonia		11.74	13.43		12.59	19.10	10.88		14.99
Aldehydes & Ketones		5.6	4.8	4.8	5.1	3.6	3.9	4.3	3.9
Aldehydes & Ketones									
Formaldehyde		1.08	0.00	0.54	0.54	0.38	0.00	0.53	0.30
Acetaldehyde		0.69	0.00	0.00	0.23	0.72	0.00	0.00	0.24
Acrolein		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Propionaldehyde		0.00	0.00	0.15	0.05	0.00	0.00	0.00	0.00
Acetone		---	---	---	---	---	---	---	---
Crotonaldehyde		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Isobutyraldehyde		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Methylethylketone		1.98	3.22	2.88	2.69	1.82	3.26	3.14	2.74
Benzaldehyde		1.83	1.53	1.24	1.53	0.64	0.62	0.63	0.63
Hexanaldehyde		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

TABLE B-5 (Cont'd). CAR 93 EMISSIONS SUMMARY - 1982 MERCURY ZEPHYR
NO AIR INJECTION

		Emission Rate, mg/min (Except as Noted)							
		Cold Modified NYCC				Hot Modified NYCC			
Test Number,	VVT	936	937	938	Average	936	937	938	Average
Barometer,	mm Hg	738.4	740.2	743.5	740.7	739.9	741.7	744.7	742.1
Humidity,	g/kg	11.7	11.7	10.7	11.4	11.4	11.9	11.8	11.7
Carbon Dioxide,	g/min	64.6	62.5	67.1	64.7	56.2	56.3	57.3	56.6
Fuel Cons.,	ℓ/100 min	3.77	3.45	3.85	3.69	2.91	2.90	2.97	2.93
Regulated Emissions									
Hydrocarbons, (THC),	g/min	0.91	0.84	0.89	0.88	0.62	0.59	0.64	0.62
Carbon Monoxide,	g/min	13.42	10.16	12.82	12.13	6.30	6.01	6.59	6.30
Oxides of Nitrogen,	g/min	0.21	0.24	0.22	0.22	0.21	0.21	0.23	0.22
Other Emissions									
Total Particulates									
Sulfate									
Hydrogen Sulfide		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cyanide		1.39	1.97		1.68	2.00	2.23		2.12
Ammonia		2.03	0.00		1.02	9.96	3.00		6.48
Aldehydes & Ketones		1.8	2.2	2.2	2.1	1.8	1.7	1.7	1.7
Aldehydes & Ketones									
Formaldehyde		0.00	0.25	0.52	0.26	0.33	0.00	0.08	0.14
Acetaldehyde		0.16	0.00	0.00	0.05	0.21	0.00	0.07	0.09
Acrolein		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Propionaldehyde		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Acetone		---	---	---	---	---	---	---	---
Crotonaldehyde		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Isobutyraldehyde		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Methylethylketone		0.73	1.03	0.53	0.76	0.58	0.93	0.85	0.79
Benzaldehyde		0.79	0.91	1.15	0.95	0.63	0.78	0.65	0.69
Hexanaldehyde		0.13	0.00	0.00	0.04	0.00	0.00	0.00	0.00

TABLE B-6. CAR 94 EMISSIONS SUMMARY - 1981 VW RABBIT
BASELINE CONFIGURATION

		Emission Rate, mg/min (Except as Noted)							
		Cold Idle				Hot Idle			
Test Number,	VVT	941	942		Average	941	942		Average
Barometer,	mm Hg	742.7	742.4		742.6	742.7	742.4		742.6
Humidity,	g/kg	12.6	12.6		12.6	11.9	11.9		11.9
Carbon Dioxide,	g/min	59.6	66.3		63.0	47.7	48.6		48.2
Fuel Cons.,	ℓ/100 min	2.83	2.98		2.91	2.04	2.08		2.06
Regulated Emissions									
Hydrocarbons, (THC),	g/min	0.41	0.24		0.33	0.00	0.01		0.01
Carbon Monoxide,	g/min	3.45	1.74		2.60	0.01	0.02		0.02
Oxides of Nitrogen,	g/min	0.13	0.08		0.11	0.03	0.06		0.05
Other Emissions									
Total Particulates									
Sulfate									
Hydrogen Sulfide		0.00	0.00		0.00	0.00	0.00		0.00
Cyanide		0.56	0.70		0.63	0.46	0.50		0.48
Ammonia		22.11	22.95		22.53	14.95	36.17		25.56
Aldehydes & Ketones		3.53	4.09		3.81	1.08	5.33		3.21
Aldehydes & Ketones									
Formaldehyde		0.00	0.31		0.16	0.00	0.31		0.16
Acetaldehyde		0.00	0.17		0.09	0.00	0.17		0.09
Acrolein		0.00	0.00		0.00	0.00	0.00		0.00
Propionaldehyde		0.00	0.00		0.00	0.39	0.18		0.29
Acetone		--	--		--	--	--		--
Crotonaldehyde		0.00	0.00		0.00	0.00	0.00		0.00
Isobutyraldehyde		0.00	0.21		0.11	0.00	0.21		0.11
Methylethylketone		2.89	2.77		2.83	0.69	4.46		2.58
Benzaldehyde		0.64	0.63		0.64	0.00	0.00		0.00
Hexanaldehyde		0.00	0.00		0.00	0.00	0.00		0.00

TABLE B-6 (Cont'd). CAR 94 EMISSIONS SUMMARY - 1981 VW RABBIT
BASELINE CONFIGURATION

		Emission Rate, mg/min (Except as Noted)							
		Cold Modified NYCC				Hot Modified NYCC			
Test Number,	VVT	941	942		Average	941	942		Average
Barometer,	mm Hg	741.2	742.2		741.7	743.0	742.4		742.7
Humidity,	g/kg	9.1	10.9		10.0	10.4	12.1		11.3
Carbon Dioxide,	g/min	64.0	61.7		62.9	55.5	54.4		55.0
Fuel Cons.,	ℓ/100 min	2.78	2.71		2.75	2.37	2.33		2.35
Regulated Emissions									
Hydrocarbons, (THC),	g/min	0.09	0.09		0.09	0.01	0.01		0.01
Carbon Monoxide,	g/min	0.54	0.79		0.67	0.13	0.14		0.14
Oxides of Nitrogen,	g/min	0.12	0.12		0.12	0.07	0.07		0.07
Other Emissions									
Total Particulates									
Sulfate									
Hydrogen Sulfide		0.00	0.00		0.00	0.00	0.00		0.00
Cyanide		0.38	0.54		0.46	0.10	0.26		0.18
Ammonia		10.05	10.07		10.06	8.81	10.02		9.42
Aldehydes & Ketones		1.1	1.6		1.4	0.9	1.2		1.1
Aldehydes & Ketones									
Formaldehyde		0.00	0.20		0.10	0.00	0.05		0.03
Acetaldehyde		0.00	0.07		0.04	0.00	0.00		0.00
Acrolein		0.00	0.00		0.00	0.00	0.00		0.00
Propionaldehyde		0.00	0.06		0.03	0.00	0.00		0.00
Acetone		--	--		--	--	--		--
Crotonaldehyde		0.00	0.00		0.00	0.00	0.00		0.00
Isobutyraldehyde		0.00	0.06		0.03	0.00	0.00		0.00
Methylethylketone		0.98	1.17		1.08	0.87	1.18		1.03
Benzaldehyde		0.13	0.00		0.07	0.00	0.00		0.00
Hexanaldehyde		0.00	0.00		0.00	0.00	0.00		0.00

TABLE B-7. CAR 94 EMISSIONS SUMMARY - 1981 VW RABBIT
RICH BEST IDLE AND DISCONNECTED OXYGEN SENSOR

	Emission Rate, mg/min (Except as Noted)							
	Cold Idle				Hot Idle			
Test Number, VVT	946	947	948	Average	946	947	948	Average
Barometer, mm Hg	743.0	744.0	744.0	743.7	743.0	744.0	744.0	743.7
Humidity, g/kg	13.1	13.1	11.9	12.7	12.6	13.1	11.9	12.5
Carbon Dioxide, g/min	38.9	38.6	42.3	39.9	27.4	27.3	27.2	27.3
Fuel Cons., ℓ/100 min	3.92	3.91	4.06	3.96	3.12	3.14	3.25	3.17
Regulated Emissions								
Hydrocarbons, (THC), g/min	1.01	1.05	0.99	1.02	0.70	0.74	0.83	0.76
Carbon Monoxide, g/min	31.62	31.69	31.58	31.63	27.65	27.85	29.44	28.31
Oxides of Nitrogen, g/min	0.03	0.03	0.04	0.03	0.01	0.02	0.02	0.02
Other Emissions								
Total Particulates								
Sulfate								
Hydrogen Sulfide	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cyanide	2.23	2.88	2.91	2.67	4.24	3.15	3.70	3.70
Ammonia	21.61	23.44	10.93	18.66	15.74	21.95	14.30	17.33
Aldehydes & Ketones	6.6	0.3	0.8	2.6	6.0	0.9	2.9	3.3
Aldehydes & Ketones								
Formaldehyde	0.00	0.00	0.00	0.00	1.70	0.00	1.06	0.92
Acetaldehyde	0.00	0.00	0.00	0.00	0.00	0.57	0.00	0.19
Acrolein	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Propionaldehyde	0.25	0.00	0.00	0.08	0.00	0.00	0.21	0.07
Acetone	--	--	--	--	--	--	--	--
Crotonaldehyde	0.00	0.00	0.16	0.05	0.00	0.00	0.00	0.00
Isobutyraldehyde	0.25	0.00	0.00	0.08	0.21	0.00	0.25	0.15
Methylethylketone	6.05	0.00	0.00	2.02	4.12	0.00	0.74	1.62
Benzaldehyde	0.00	0.31	0.62	0.31	0.00	0.31	0.64	0.32
Hexanaldehyde	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

TABLE B-7 (Cont'd). CAR 94 EMISSIONS SUMMARY - 1981 VW RABBIT
RICH BEST IDLE AND DISCONNECTED OXYGEN SENSOR

		Emission Rate, mg/min (Except as Noted)							
		Cold Modified NYCC				Hot Modified NYCC			
Test Number,	VVT	946	947	948	Average	946	947	948	Average
Barometer,	mm Hg	741.2	741.4	742.2	741.6	743.0	744.0	744.0	743.7
Humidity,	g/kg	10.5	9.3	10.4	10.1	15.0	13.1	11.9	13.3
Carbon Dioxide,	g/min	39.5	40.0	40.2	39.9	33.2	33.5	34.3	33.7
Fuel Cons.,	ℓ/100 min	3.83	3.90	3.92	3.88	3.48	3.55	3.65	3.56
Regulated Emissions									
Hydrocarbons, (THC),	g/min	0.90	0.90	0.94	0.91	0.89	0.95	1.00	0.95
Carbon Monoxide,	g/min	29.91	30.87	30.67	30.48	29.12	29.91	30.26	29.76
Oxides of Nitrogen,	g/min	0.09	0.08	0.10	0.09	0.05	0.07	0.06	0.06
Other Emissions									
Total Particulates									
Sulfate									
Hydrogen Sulfide		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cyanide		4.05	3.32	3.66	3.68	4.57	3.17	4.68	4.14
Ammonia		9.69	4.62	11.28	8.53	7.89	10.38	15.45	11.24
Aldehydes & Ketones		1.9	1.5	3.6	2.3	1.7	0.4	3.4	1.8
Aldehydes & Ketones									
Formaldehyde		0.61	0.45	1.37	0.81	0.00	0.00	1.29	0.43
Acetaldehyde		0.35	0.18	0.71	0.41	0.00	0.00	0.22	0.07
Acrolein		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Propionaldehyde		0.09	0.17	0.35	0.20	0.00	0.00	0.34	0.11
Acetone		--	--	--	--	--	--	--	--
Crotonaldehyde		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Isobutyraldehyde		0.07	0.00	0.20	0.09	0.00	0.00	0.10	0.03
Methylethylketone		0.00	0.10	0.00	0.03	1.19	0.00	0.50	0.56
Benzaldehyde		0.79	0.00	0.92	0.57	0.52	0.39	0.91	0.61
Hexanaldehyde		0.00	0.60	0.00	0.20	0.00	0.00	0.00	0.00

TABLE B-8. CAR 95 EMISSIONS SUMMARY 1980 BUICK CENTURY
BASELINE CONFIGURATION

Test Number, VVT	Emission Rate, mg/min (Except as Noted)							
	Cold Idle				Hot Idle			
	951	952	953	Average	951	952	953	Average
Barometer, mm Hg	744.5	742.7	742.4	743.2	744.5	742.7	742.7	743.3
Humidity, g/kg	12.1	12.9	12.4	12.5	12.3	12.9	12.1	12.4
Carbon Dioxide, g/min	154.7	100.6	103.0	119.4	53.5	58.0	52.5	54.7
Fuel Cons., ℓ/100 min	6.96	4.60	4.72	5.43	2.33	2.53	2.29	2.38
Regulated Emissions								
Hydrocarbons, (THC), g/min	1.29	1.61	1.57	1.49	0.31	0.36	0.36	0.34
Carbon Monoxide, g/min	2.66	1.35	1.67	1.89	0.03	0.02	0.02	0.02
Oxides of Nitrogen, g/min	0.31	0.23	0.24	0.26	0.01	0.02	0.02	0.02
Other Emissions								
Total Particulates	30.54	13.25	4.39	16.06	21.66	6.21	8.30	12.06
Sulfate	0.48	0.59	0.22	0.43	0.64	0.57	0.26	0.49
Hydrogen Sulfide								
Cyanide								
Ammonia								
Aldehydes & Ketones	7.8	7.1	12.7	9.2	6.5	2.5	4.3	4.4
Aldehydes & Ketones								
Formaldehyde	2.07	3.12	5.11	3.43	1.40	0.54	0.40	0.78
Acetaldehyde	0.41	0.00	1.04	0.48	0.26	0.00	0.71	0.32
Acrolein	0.00	0.00	0.37	0.12	0.38	0.00	0.00	0.13
Propionaldehyde	0.17	0.00	0.59	0.25	0.39	0.00	0.21	0.20
Acetone	--	--	--	--	--	--	--	--
Crotonaldehyde	0.20	0.00	0.44	0.21	0.44	0.00	0.00	0.15
Isobutyraldehyde	0.20	0.00	0.24	0.15	0.21	0.00	0.24	0.15
Methylethylketone	2.56	1.61	2.11	2.09	3.13	1.67	2.11	2.30
Benzaldehyde	2.14	2.10	2.15	2.13	0.00	0.27	0.27	0.18
Hexanaldehyde	0.00	0.25	0.61	0.20	0.31	0.00	0.31	0.21

TABLE B-8 (Cont'd). CAR 95 EMISSIONS SUMMARY - 1980 BUICK CENTURY
BASELINE CONFIGURATION

	Emission Rate, mg/min (Except as Noted)							
	Cold Modified NYCC				Hot Modified NYCC			
Test Number, VVT	951	952	953	Average	951	952	953	Average
Barometer, mm Hg	741.7	740.7	740.7	740.9	744.5	742.7	742.7	743.3
Humidity, g/kg	9.8	9.3	10.0	9.7	11.1	12.1	11.4	11.5
Carbon Dioxide, g/min	70.0	69.6	78.4	72.7	72.4	74.8	72.7	73.3
Fuel Cons., ℓ/100 min	3.61	3.55	3.88	3.68	3.16	3.25	3.18	3.20
Regulated Emissions								
Hydrocarbons, (THC), g/min	4.09	3.76	3.19	3.68	0.33	0.33	0.39	0.35
Carbon Monoxide, g/min	1.32	1.27	1.29	1.29	0.23	0.26	0.34	0.28
Oxides of Nitrogen, g/min	0.10	0.09	0.12	0.10	0.05	0.06	0.06	0.06
Other Emissions								
Total Particulates	6.11	6.18	12.13	8.14	3.91	12.40	7.60	7.97
Sulfate	0.19	0.07	0.17	0.14	0.19	0.21	0.11	0.17
Hydrogen Sulfide								
Cyanide								
Ammonia								
Aldehydes & Ketones	4.6	10.7	3.3	6.2	1.3	1.8	1.1	1.4
Aldehydes & Ketones								
Formaldehyde	0.87	6.21	1.51	2.86	0.55	0.48	0.46	0.50
Acetaldehyde	0.07	0.48	0.15	0.23	0.00	0.14	0.15	0.10
Acrolein	0.05	0.25	0.00	0.10	0.00	0.08	0.00	0.03
Propionaldehyde	0.06	0.23	0.00	0.10	0.00	0.06	0.00	0.02
Acetone	--	--	--	--	--	--	--	--
Crotonaldehyde	0.06	0.20	0.00	0.09	0.00	0.10	0.00	0.03
Isobutyraldehyde	0.07	0.30	0.00	0.12	0.00	0.10	0.00	0.03
Methylethylketone	0.58	0.52	0.38	0.49	0.47	0.72	0.48	0.56
Benzaldehyde	1.18	2.15	1.12	1.48	0.00	0.08	0.00	0.03
Hexanaldehyde	1.66	0.33	0.13	0.71	0.25	0.00	0.00	0.08

TABLE B-9. CAR 95 EMISSIONS SUMMARY - 1980 BUICK CENTURY
RICH BEST IDLE AND NO AIR INJECTION

		Emission Rate, mg/min (Except as Noted)							
		Cold Idle				Hot Idle			
Test Number,	VVT	956	957	958	Average	956	957	958	Average
Barometer,	mm Hg	740.4	743.0	745.0	742.8	740.7	743.0	745.2	743.0
Humidity,	g/kg	13.1	12.1	12.6	12.6	12.9	11.6	11.3	11.9
Carbon Dioxide,	g/min	109.3	116.4	115.9	113.9	67.4	70.3	69.7	69.1
Fuel Cons.,	ℓ/100 min	8.12	8.28	8.37	8.26	3.71	3.76	3.89	3.79
Regulated Emissions									
Hydrocarbons, (THC),	g/min	1.35	1.37	1.38	1.37	0.55	0.56	0.58	0.56
Carbon Monoxide,	g/min	48.73	46.57	48.12	47.81	11.28	10.25	12.48	11.34
Oxides of Nitrogen,	g/min	0.10	0.11	0.11	0.11	0.13	0.15	0.15	0.14
Other Emissions									
Total Particulates		13.57	8.76	10.49	10.94	--	4.22	6.45	5.34
Sulfate		0.36	0.34	0.24	0.31	0.53	0.25	0.12	0.30
Hydrogen Sulfide									
Cyanide									
Ammonia									
Aldehydes & Ketones		1.6	4.3	1.9	2.6	1.5	3.5	1.9	2.3
Aldehydes & Ketones									
Formaldehyde		0.00	1.27	0.26	0.51	0.00	0.81	0.01	0.27
Acetaldehyde		0.00	0.76	0.09	0.28	0.00	0.45	0.00	0.15
Acrolein		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Propionaldehyde		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Acetone		--	--	--	--	--	--	--	--
Crotonaldehyde		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Isobutyraldehyde		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Methylethylketone		0.95	1.66	0.99	1.20	1.17	1.69	0.98	1.28
Benzaldehyde		0.61	0.57	0.57	0.58	0.30	0.58	0.57	0.48
Hexanaldehyde		0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.10

TABLE B-9 (Cont'd). CAR 95 EMISSIONS SUMMARY - 1980 BUICK CENTURY
RICH BEST IDLE AND NO AIR INJECTION

		Emission Rate, mg/min (Except as Noted)							
		Cold Modified NYCC				Hot Modified NYCC			
Test Number,	VVT	956	957	958	Average	956	957	958	Average
Barometer,	mm Hg	740.7	743.0	744.5	742.7	740.9	743.2	745.2	743.1
Humidity,	g/kg	12.4	11.9	13.6	12.6	13.1	11.4	11.3	11.9
Carbon Dioxide,	g/min	94.1	92.2	91.2	92.5	88.2	90.1	91.1	89.8
Fuel Cons.,	ℓ/100 min	4.99	4.87	4.76	4.87	4.44	4.45	4.54	4.48
Regulated Emissions									
Hydrocarbons, (THC),	g/min	0.70	0.72	0.67	0.70	0.57	0.57	0.57	0.57
Carbon Monoxide,	g/min	12.99	12.74	12.00	12.58	8.71	7.75	8.12	8.19
Oxides of Nitrogen,	g/min	0.29	0.28	0.33	0.30	0.36	0.37	0.35	0.36
Other Emissions									
Total Particulates		7.54	2.54	3.09	4.39	--	1.06	1.92	1.49
Sulfate		0.09	0.18	0.20	0.16	0.11	0.14	0.10	0.12
Hydrogen Sulfide									
Cyanide									
Ammonia									
Aldehydes & Ketones		0.8	1.8	1.9	1.5	1.3	1.8	1.3	1.5
Aldehydes & Ketones									
Formaldehyde		0.00	0.31	0.14	0.15	0.66	0.62	0.30	0.53
Acetaldehyde		0.00	0.15	0.06	0.07	0.00	0.09	0.00	0.03
Acrolein		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Propionaldehyde		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Acetone		--	--	--	--	--	--	--	--
Crotonaldehyde		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Isobutyraldehyde		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Methylethylketone		0.39	0.54	0.38	0.44	0.26	0.46	0.39	0.37
Benzaldehyde		0.41	0.84	1.35	0.87	0.39	0.61	0.61	0.54
Hexanaldehyde		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

TABLE B-10. CAR 96 EMISSIONS SUMMARY - 1978 CHEVROLET NOVA
BASELINE CONFIGURATION

	Emission Rate, mg/min (Except as Noted)							
	Cold Idle				Hot Idle			
Test Number, VVT	961	962	963	Average	961	962		Average
Barometer, mm Hg	743.2	743.0	744.5	743.6	743.2	743.0		743.1
Humidity, g/kg	12.6	12.4	12.6	12.5	11.9	12.4		12.2
Carbon Dioxide, g/min	147.7	145.5	139.5	144.2	54.3	65.9		60.1
Fuel Cons., ℓ/100 min	8.18	8.54	8.33	8.35	2.38	2.87		2.63
Regulated Emissions								
Hydrocarbons, (THC), g/min	1.72	3.50	3.87	3.03	0.40	0.40		0.40
Carbon Monoxide, g/min	24.48	27.62	27.59	26.56	0.05	0.09		0.07
Oxides of Nitrogen, g/min	0.71	0.74	0.85	0.77	0.04	0.05		0.05
Other Emissions								
Total Particulates								
Sulfate								
Hydrogen Sulfide	0.00	0.00	0.00	0.00	0.00	0.00		0.00
Cyanide	1.80	2.27	3.74	2.60	0.49	0.34		0.42
Ammonia	25.43	11.67	3.49	13.53	21.01	18.36		19.69
Aldehydes & Ketones	4.6	5.1	2.9	4.2	3.2	1.4		2.3
Aldehydes & Ketones								
Formaldehyde	0.78	1.82	0.47	1.02	0.55	0.31		0.43
Acetaldehyde	0.56	0.00	0.00	0.19	0.57	0.00		0.29
Acrolein	0.00	0.00	0.00	0.00	0.00	0.00		0.00
Propionaldehyde	0.00	0.00	0.00	0.00	0.00	0.00		0.00
Acetone	--	--	--	--	--	--		--
Crotonaldehyde	0.00	0.24	0.00	0.08	0.00	0.00		0.00
Isobutyraldehyde	0.00	0.00	0.00	0.00	0.00	0.00		0.00
Methylethylketone	1.43	0.82	0.27	0.84	1.45	0.74		1.10
Benzaldehyde	1.85	2.24	2.13	2.07	0.63	0.30		0.47
Hexanaldehyde	0.00	0.00	0.00	0.00	0.00	0.00		0.00

TABLE B-10 (Cont'd). CAR 96 EMISSIONS SUMMARY - 1978 CHEVROLET NOVA
BASELINE CONFIGURATION

		Emission Rate, mg/min (Except as Noted)							
		Cold Modified NYCC				Hot Modified NYCC			
Test Number,	VVT	961	962		Average	961	962		Average
Barometer,	mm Hg	742.4	740.7		741.6	743.5	743.2		743.4
Humidity,	g/kg	10.9	10.9		10.9	12.4	12.9		12.7
Carbon Dioxide,	g/min	92.1	87.5		89.8	77.9	77.1		77.5
Fuel Cons.,	ℓ/100 min	4.48	4.18		4.33	3.37	3.35		3.36
Regulated Emissions									
Hydrocarbons, (THC),	g/min	0.92	1.31		1.12	0.39	0.39		0.39
Carbon Monoxide,	g/min	5.91	3.68		4.80	0.12	0.15		0.14
Oxides of Nitrogen,	g/min	0.22	0.22		0.22	0.11	0.12		0.12
Other Emissions									
Total Particulates									
Sulfate									
Hydrogen Sulfide		0.00	0.00		0.00	0.00	0.00		0.00
Cyanide		0.56	0.32		0.44	0.17	0.16		0.17
Ammonia		5.08	9.20		7.14	3.02	11.29		7.16
Aldehydes & Ketones		2.5	2.1		2.3	1.3	1.7		1.5
Aldehydes & Ketones									
Formaldehyde		0.85	0.71		0.78	0.65	0.57		0.61
Acetaldehyde		0.18	0.00		0.09	0.04	0.00		0.02
Acrolein		0.00	0.00		0.00	0.00	0.00		0.00
Propionaldehyde		0.00	0.00		0.00	0.00	0.35		0.18
Acetone		--	--		--	--	--		--
Crotonaldehyde		0.00	0.00		0.00	0.00	0.00		0.00
Isobutyraldehyde		0.00	0.00		0.00	0.00	0.00		0.00
Methylethylketone		0.45	0.22		0.34	0.35	0.23		0.29
Benzaldehyde		1.04	1.43		1.24	0.26	0.53		0.40
Hexanaldehyde		0.00	0.00		0.00	0.00	0.00		0.00

TABLE B-11. CAR 96 EMISSIONS SUMMARY - 1978 CHEVROLET NOVA
RICHER IDLE

		Emission Rate, mg/min (Except as Noted)							
		Cold Idle				Hot Idle			
Test Number,	VVT	966			Average	966			Average
Barometer,	mm Hg	741.2				741.2			
Humidity,	g/kg	11.9				11.4			
Carbon Dioxide,	g/min	147.7				71.7			
Fuel Cons.,	ℓ/100 min	8.14				3.10			
Regulated Emissions									
Hydrocarbons, (THC),	g/min	1.75				0.27			
Carbon Monoxide,	g/min	23.91				0.07			
Oxides of Nitrogen,	g/min	0.86				0.08			
Other Emissions									
Total Particulates									
Sulfate									
Hydrogen Sulfide		0.00				0.00			
Cyanide		2.47				0.65			
Ammonia		--				18.52			
Aldehydes & Ketones		0.6				0.6			
Aldehydes & Ketones									
Formaldehyde		0.00				0.00			
Acetaldehyde		0.00				0.00			
Acrolein		0.00				0.00			
Propionaldehyde		0.00				0.00			
Acetone		--				--			
Crotonaldehyde		0.00				0.00			
Isobutyraldehyde		0.00				0.00			
Methylethylketone		0.59				0.63			
Benzaldehyde		0.00				0.00			
Hexanaldehyde		0.00				0.00			

TABLE B-11 (Cont'd). CAR 96 EMISSIONS SUMMARY - 1978 CHVEROLET NOVA
Richer Idle

		Emission Rate, mg/min (Except as Noted)							
		Cold Modified NYCC				Hot Modified NYCC			
Test Number,	VVT	966	967		Average	966	967		Average
Barometer,	mm Hg	738.6	740.7		739.7	740.9	743.7		742.3
Humidity,	g/kg	11.0	12.9		12.0	11.7	12.4		12.1
Carbon Dioxide,	g/min	96.0	99.9		98.0	85.5	88.2		86.9
Fuel Cons.,	ℓ/100 min	4.53	4.75		4.64	3.70	3.81		3.76
Regulated Emissions									
Hydrocarbons, (THC),	g/min	0.77	0.74		0.76	0.26	0.27		0.27
Carbon Monoxide,	g/min	4.98	5.48		5.23	0.13	0.27		0.20
Oxides of Nitrogen,	g/min	0.30	0.38		0.34	0.16	0.21		0.19
Other Emissions									
Total Particulates									
Sulfate									
Hydrogen Sulfide		0.00	0.00		0.00	0.00	0.00		0.00
Cyanide		0.70	0.94		0.82	0.36	0.47		0.42
Ammonia		12.94	--		12.94	2.53	6.22		4.38
Aldehydes & Ketones		2.7	4.6		3.7	1.0	2.9		2.0
Aldehydes & Ketones									
Formaldehyde		1.17	1.88		1.53	0.30	1.30		0.80
Acetaldehyde		0.00	0.12		0.06	0.00	0.12		0.06
Acrolein		0.00	0.00		0.00	0.00	0.00		0.00
Propionaldehyde		0.00	0.00		0.00	0.00	0.00		0.00
Acetone		--	--		--	--	--		--
Crotonaldehyde		0.00	0.10		0.05	0.00	0.00		0.00
Isobutyraldehyde		0.00	0.10		0.05	0.00	0.00		0.00
Methylethylketone		0.30	0.59		0.45	0.30	0.60		0.45
Benzaldehyde		1.18	1.67		1.43	0.39	0.91		0.65
Hexanaldehyde		0.00	0.12		0.06	0.00	0.00		0.00

APPENDIX C

INDIVIDUAL MODIFIED NYCC TEST RESULT SUMMARY TABLES

Emissions Listed in Grams per Kilometer or
Milligrams per Kilometer

Fuel Consumption Listed in Liters per
100 Kilometers

TABLE C-1. CAR 91 EMISSION SUMMARY - 1970 FORD FAIRLANE
BASELINE CONFIGURATION

	Emission Rate, mg/km (Except as Noted)							
	Modified Cold NYCC				Modified Hot NYCC			
Test Number, VVT	911	912		Average	911	912		Average
Fuel Cons., ℓ/100 min	98.6	85.6		92.1	77.1	71.5		74.3
Regulated Emissions								
Hydrocarbons, (THC), g/km	12.3	6.5		9.4	4.7	4.1		4.4
Carbon Monoxide, g/km	232.0	54.3		143.2	18.2	16.5		17.4
Oxides of Nitrogen, g/km	3.0	3.5		3.3	3.8	3.3		3.6
Other Emissions								
Total Particulates	343	244		294	300	179		240
Sulfate	0	0		0	0	0		0
Hydrogen Sulfide	0	0		0	0	0		0
Cyanide	5	3		4	2	0		1
Ammonia	53	59		56	56	45		51
Aldehdyes & Ketones	8	28		18	35	35		35
Aldehydes & Ketones								
Formaldehyde	1	15		8	13	18		16
Acetaldehyde	1	3		2	1	2		2
Acrolein	0	0		0	1	0		1
Propionaldehyde	0	1		1	1	1		1
Acetone	-	-		-	-	-		-
Crotonaldehyde	0	0		0	2	0		1
Isobutyraldehyde	0	1		1	3	1		2
Methylethylketone	0	0		0	<1	5		3
Benzaldehyde	6	7		7	12	7		10
Hexanaldehyde	0	0		0	1	0		1

TABLE C-2. CAR 91 EMISSION SUMMARY - 1970 FORD FAIRLANE
RICH BEST IDLE

	Emission Rate, mg/km (Except as Noted)							
	Modified Cold NYCC				Modified Hot NYCC			
Test Number, VVT	916	917		Average	916	917		Average
Fuel Cons., ℓ/100 min	92.4	86.3		89.4	78.3	80.6		79.5
Regulated Emissions								
Hydrocarbons, (THC), g/km	11.4	14.7		13.1	8.8	8.8		8.8
Carbon Monoxide, g/km	350.7	235.9		293.3	268.2	259.1		263.7
Oxides of Nitrogen, g/km	2.8	2.6		2.7	2.8	2.8		2.8
Other Emissions								
Total Particulates								
Sulfate	2	0		1	3	0		2
Hydrogen Sulfide	0	0		0	0	0		0
Cyanide	29	35		32	25	24		25
Ammonia	229	191		210	251	103		177
Aldehdyes & Ketones	54	62		58	23	15		19
Aldehydes & Ketones								
Formaldehyde	21	39		30	3	0		2
Acetaldehyde	3	5		4	1	2		2
Acrolein	0	0		0	0	0		0
Propionaldehyde	1	0		1	1	0		1
Acetone	-	-		-	-	-		-
Crotonaldehyde	2	0		1	0	0		<1
Isobutyraldehyde	2	0		1	<1	0		4
Methylethylketone	9	4		7	5	2		4
Benzaldehyde	16	14		15	12	10		11
Hexanaldehyde	0	0		0	0	0		0

TABLE C-3. CAR 92 EMISSION SUMMARY - 1981 OLDS DELTA 88
BASELINE CONFIGURATION

	Emission Rate, mg/km (Except as Noted)							
	Modified Cold NYCC				Modified Hot NYCC			
Test Number, VVT	921	922		Average	921	922		Average
Fuel Cons., ℓ/100 min	61.3	57.5		59.4	53.9	54.0		54.0
Regulated Emissions								
Hydrocarbons, (THC), g/km	4.1	3.7		3.9	2.3	2.2		2.3
Carbon Monoxide, g/km	7.6	7.3		7.5	5.6	5.4		5.5
Oxides of Nitrogen, g/km	3.2	2.7		3.0	2.9	2.9		2.9
Other Emissions								
Total Particulates	1531	1655		1593	1241	1228		1235
Sulfate	27	26		27	12	13		13
Hydrogen Sulfide								
Cyanide								
Ammonia								
Aldehdyes & Ketones	9	11		10	18	29		24
Aldehydes & Ketones								
Formaldehyde	0	0		0	0	0		0
Acetaldehyde	0	0		0	0	0		0
Acrolein	0	0		0	2	2		2
Propionaldehyde	0	0		0	4	4		4
Acetone	-	-		-	-	-		-
Crotonaldehyde	0	0		0	2	2		2
Isobutyraldehyde	0	0		0	5	5		5
Methylethylketone	6	8		7	0	10		5
Benzaldehyde	3	3		3	3	3		3
Hexanaldehyde	0	0		0	3	3		3

TABLE C-4. CAR 93 EMISSION SUMMARY - 1982 MERCURY ZEPHYR
BASELINE CONFIGURATION

	Emission Rate, mg/km (Except as Noted)							
	Modified Cold NYCC				Modified Hot NYCC			
Test Number, VVT	931	932		Average	931	932		Average
Fuel Cons., ℓ/100 min	54.4	57.2		55.8	45.7	44.1		44.9
Regulated Emissions								
Hydrocarbons, (THC), g/km	3.6	3.5		3.6	0.9	0.7		0.8
Carbon Monoxide, g/km	25.7	38.6		32.2	3.2	4.3		3.8
Oxides of Nitrogen, g/km	2.5	2.3		2.4	2.3	2.2		2.3
Other Emissions								
Total Particulates								
Sulfate								
Hydrogen Sulfide	0	0		0	0	0		0
Cyanide	5	8		7	4	1		3
Ammonia	171	352		262	112	167		140
Aldehdyes & Ketones	11	22		17	10	0		5
Aldehydes & Ketones								
Formaldehyde	4	10		7	5	0		3
Acetaldehyde	3	3		3	6	0		3
Acrolein	0	1		1	0	0		0
Propionaldehyde	1	0		1	0	0		0
Acetone	-	-		-	-	-		-
Crotonaldehyde	0	0		0	0	0		0
Isobutyraldehyde	0	1		1	0	0		0
Methylethylketone	0	3		2	0	0		0
Benzaldehyde	4	4		4	0	0		0
Hexanaldehyde	0	0		0	0	0		0

TABLE C-5. CAR 93 EMISSION SUMMARY - 1982 MERCURY ZEPHYR
NO AIR INJECTION

	Emission Rate, mg/km (Except as Noted)							
	Modified Cold NYCC				Modified Hot NYCC			
Test Number, VVT	936	937	938	Average	936	937	938	Average
Fuel Cons., ℓ/100 min	57.1	50.4	59.5	55.7	42.5	45.0	44.6	44.0
Regulated Emissions								
Hydrocarbons, (THC), g/km	13.8	12.3	13.8	13.3	9.0	9.2	9.6	9.3
Carbon Monoxide, g/km	203.2	148.3	198.0	183.2	92.2	93.6	98.7	94.8
Oxides of Nitrogen, g/km	3.1	3.6	3.4	3.4	3.0	3.2	3.4	3.2
Other Emissions								
Total Particulates								
Sulfate								
Hydrogen Sulfide	0	0	0	0	0	0	0	0
Cyanide	21	29		25	29	33		31
Ammonia	31	0		16	145	44		95
Aldehdyes & Ketones	27	32	34	31	26	25	25	25
Aldehydes & Ketones								
Formaldehyde	0	4	8	4	5	0	1	2
Acetaldehyde	2	0	0	1	3	0	1	1
Acrolein	0	0	0	0	0	0	0	0
Propionaldehyde	0	0	0	0	0	0	0	0
Acetone	-	-	-	-	-	-	-	-
Crotonaldehyde	0	0	0	0	0	0	0	0
Isobutyraldehyde	0	0	0	0	0	0	0	0
Methylethylketone	11	15	8	11	8	14	13	12
Benzaldehyde	12	13	18	14	9	11	10	10
Hexanaldehyde	2	0	0	1	0	0	0	0

TABLE C-6. CAR 94 EMISSION SUMMARY - 1981 VW RABBIT
BASELINE CONFIGURATION

	Emission Rate, mg/km (Except as Noted)							
	Modified Cold NYCC				Modified Hot NYCC			
Test Number, VVT	941	942		Average	941	942		Average
Fuel Cons., ℓ/100 min	42.3	41.4		41.9	35.2	35.9		35.6
Regulated Emissions								
Hydrocarbons, (THC), g/km	1.4	1.4		1.4	0.2	0.2		0.2
Carbon Monoxide, g/km	8.2	12.1		10.2	1.9	2.2		2.1
Oxides of Nitrogen, g/km	1.8	1.8		1.8	1.0	0.9		1.0
Other Emissions								
Total Particulates								
Sulfate								
Hydrogen Sulfide	0	0		0	0	0		0
Cyanide	6	8		7	2	4		3
Ammonia	153	154		154	134	155		145
Aldehdyes & Ketones	17	24		21	13	19		16
Aldehydes & Ketones								
Formaldehyde	0	3		2	0	1		1
Acetaldehyde	0	1		1	0	0		0
Acrolein	0	0		0	0	0		0
Propionaldehyde	0	1		1	0	0		0
Acetone	-	-		-	-	-		-
Crotonaldehyde	0	0		0	0	0		0
Isobutyraldehyde	0	1		1	0	0		0
Methylethylketone	15	18		17	13	18		16
Benzaldehyde	2	0		1	0	0		0
Hexanaldehyde	0	0		0	0	0		0

TABLE C-7. CAR 94 EMISSION SUMMARY - 1981 VW RABBIT
RICH BEST IDLE AND DISCONNECTED OXYGEN SENSOR

	Emission Rate, mg/km (Except as Noted)							
	Modified Cold NYCC				Modified Hot NYCC			
Test Number, VVT	946	947	948	Average	946	947	948	Average
Fuel Cons., ℓ/100 min	57.6	60.9	58.9	59.1	52.3	52.8	52.9	52.7
Regulated Emissions								
Hydrocarbons, (THC), g/km	13.6	14.0	14.2	13.9	13.3	14.1	14.5	14.0
Carbon Monoxide, g/km	449.9	482.4	461.4	464.6	438.0	444.4	438.7	440.4
Oxides of Nitrogen, g/km	1.3	1.2	1.5	1.3	0.8	1.1	0.9	0.9
Other Emissions								
Total Particulates								
Sulfate								
Hydrogen Sulfide	0	0	0	0	0	0	0	0
Cyanide	62	52	55	56	69	47	68	61
Ammonia	149	72	170	130	119	154	224	166
Aldehdyes & Ketones	29	23	53	35	26	6	49	27
Aldehydes & Ketones								
Formaldehyde	9	7	21	12	0	0	19	6
Acetaldehyde	5	3	11	6	0	0	3	1
Acrolein	0	0	0	0	0	0	0	0
Propionaldehyde	1	3	5	3	0	0	5	2
Acetone	-	-	-	-	-	-	-	-
Crotonaldehyde	0	0	0	0	0	0	0	0
Isobutyraldehyde	1	0	3	1	0	0	1	<1
Methylethylketone	0	2	0	1	18	0	7	8
Benzaldehyde	12	0	14	9	8	6	13	9
Hexanaldehyde	0	9	0	3	0	0	0	0

TABLE C-8. CAR 95 EMISSION SUMMARY - 1980 BUICK CENTURY
BASELINE

	Emission Rate, mg/km (Except as Noted)							
	Modified Cold NYCC				Modified Hot NYCC			
Test Number, VVT	951	952	953	Average	951	952	953	Average
Fuel Cons., ℓ/100 min	54.3	52.7	56.9	54.6	48.1	48.2	47.3	47.9
Regulated Emissions								
Hydrocarbons, (THC), g/km	61.1	55.6	47.0	54.6	5.1	5.0	5.8	5.3
Carbon Monoxide, g/km	19.7	18.8	18.9	19.1	3.5	3.9	5.1	4.2
Oxides of Nitrogen, g/km	1.5	1.4	1.7	1.5	0.8	0.9	0.9	0.9
Other Emissions								
Total Particulates	92	92	178	121	60	184	113	119
Sulfate	3	1	2	2	3	3	2	3
Hydrogen Sulfide								
Cyanide								
Ammonia								
Aldehdyes & Ketones	69	158	48	92	19	27	16	21
Aldehydes & Ketones								
Formaldehyde	13	92	22	42	8	7	7	7
Acetaldehyde	1	7	2	3	0	2	2	1
Acrolein	1	4	0	2	0	1	0	<1
Propionaldehyde	1	3	0	1	0	1	0	<1
Acetone	-	-	-	-	-	-	-	-
Crotonaldehyde	1	3	0	1	0	1	0	<1
Isobutyraldehyde	1	4	0	2	0	1	0	<1
Methylethylketone	9	8	6	8	7	11	7	10
Benzaldehyde	18	32	16	22	0	1	0	<1
Hexanaldehyde	25	5	2	11	4	1	0	2

TABLE C-9. CAR 95 EMISSION SUMMARY - 1980 BUICK CENTURY
RICH BEST IDLE AND NO AIR INJECTION

	Emission Rate, mg/km (Except as Noted)							
	Modified Cold NYCC				Modified Hot NYCC			
Test Number, VVT	956	957	958	Average	956	957	958	Average
Fuel Cons., ℓ/100 min	75.0	73.2	71.7	73.3	66.7	67.8	67.3	74.0
Regulated Emissions								
Hydrocarbons, (THC), g/km	10.5	10.8	10.0	10.4	8.6	8.6	8.5	8.6
Carbon Monoxide, g/km	195.4	122.7	180.4	166.2	130.8	118.0	120.5	123.1
Oxides of Nitrogen, g/km	4.3	4.2	4.9	4.5	5.5	5.6	5.3	5.5
Other Emissions								
Total Particulates	113	38	46	66	-	16	28	22
Sulfate	1	3	3	2	2	2	1	2
Hydrogen Sulfide								
Cyanide								
Ammonia								
Aldehdyes & Ketones	12	28	29	23	20	27	19	22
Aldehydes & Ketones								
Formaldehyde	0	5	2	2	10	9	4	8
Acetaldehyde	0	2	1	1	0	1	0	<1
Acrolein	0	0	0	0	0	0	0	0
Propionaldehyde	0	0	0	0	0	0	0	0
Acetone	-	-	-	-	-	-	-	-
Crotonaldehyde	0	0	0	0	0	0	0	0
Isobutyraldehyde	0	0	0	0	0	0	0	0
Methylethylketone	6	8	6	7	4	7	6	6
Benzaldehyde	6	13	20	13	6	9	9	8
Hexanaldehyde	0	0	0	0	0	0	0	0

TABLE C-10. CAR 96 EMISSION SUMMARY - 1978 CHEVROLET NOVA
BASELINE

	Emission Rate, mg/km (Except as Noted)							
	Modified Cold NYCC				Modified Hot NYCC			
Test Number, VVT	961	962		Average	961	962		Average
Fuel Cons., ℓ/100 min	66.4	61.4		63.9	50.7	49.7		50.2
Regulated Emissions								
Hydrocarbons, (THC), g/km	13.8	19.3		16.6	5.8	5.7		5.8
Carbon Monoxide, g/km	88.2	54.4		71.3	1.8	2.2		2.0
Oxides of Nitrogen, g/km	3.3	3.3		3.3	1.7	1.8		1.8
Other Emissions								
Total Particulates								
Sulfate								
Hydrogen Sulfide	0	0		0	0	0		0
Cyanide	8	5		7	3	2		3
Ammonia	75	135		105	45	168		107
Aldehdyes & Ketones	37	32		35	19	25		22
Aldehydes & Ketones								
Formaldehyde	13	11		12	10	8		9
Acetaldehyde	3	0		2	1	0		1
Acrolein	0	0		0	0	0		0
Propionaldehyde	0	0		0	0	5		3
Acetone	-	-		-	-	-		-
Crotonaldehyde	0	0		0	0	0		0
Isobutyraldehyde	0	0		0	0	0		0
Methylethylketone	7	3		5	5	3		4
Benzaldehyde	15	21		18	4	8		6
Hexanaldehyde	0	0		0	0	0		0

TABLE C-1.. CAR 96 EMISSION SUMMARY - 1978 CHEVROLET NOVA
RICHER IDLE

		Emission Rate, mg/km (Except as Noted)							
		Modified Cold NYCC				Modified Hot NYCC			
Test Number,	VVT	966	977		Average	966	967		Average
Fuel Cons.,	ℓ/100 min	67.2	69.7		68.5	56.3	55.1		55.7
Regulated Emissions									
Hydrocarbons, (THC),	g/km	11.5	10.9		11.2	3.9	3.8		3.9
Carbon Monoxide,	g/km	73.7	80.7		77.2	2.0	3.9		3.0
Oxides of Nitrogen,	g/km	4.5	5.7		5.1	2.5	3.1		2.8
Other Emissions									
Total Particulates									
Sulfate									
Hydrogen Sulfide		0	0		0	0	0		0
Cyanide		10	14		12	5	7		6
Ammonia		192	--		192	38	90		64
Aldehdyes & Ketones		39	67		53	15	42		29
Aldehydes & Ketones									
Formaldehyde		17	28		23	4	19		12
Acetaldehyde		0	2		1	0	2		1
Acrolein		0	0		0	0	0		0
Propionaldehyde		0	0		0	0	0		0
Acetone		-	-		-	-	-		-
Crotonaldehyde		0	1		1	0	0		0
Isobutyraldehyde		0	1		1	0	0		0
Methylethylketone		4	9		7	4	9		7
Benzaldehyde		18	25		22	6	13		10
Hexanaldehyde		0	2		1	0	0		0

APPENDIX D

COMPUTER PRINTOUTS OF THE REGULATED EMISSIONS TEST RESULTS

TABLE D-1. TEST NO. 911 EMISSION RESULTS

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                         C-IDLE - VEHICLE EMISSIONS RESULTS - FAIRLANE BASELINE
                                  PROJECT 05-6619-004

TEST NO. 911        RUN   1                VEHICLE NO.91                TEST WEIGHT  1814. KG( 4000. LBS)
VEHICLE MODEL   70 FORD FAIRLANE           DATE     5/24/82             ACTUAL ROAD LOAD   8.9 KW( 12.0 HP)
ENGINE 4.9 L(302. CID) V-8                 BAG CART NO.  1              GASOLINE      EM-516-F
TRANSMISSION A3                            DYNO NO.      3              ODOMETER ****** KM(67594. MILES)
                                           CVS NO.   2

BAROMETER 737.87 MM HG(29.05 IN HG)        DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
RELATIVE HUMIDITY  62. PCT                 ABS. HUMIDITY 12.0 GM/KG     NOX HUMIDITY CORRECTION FACTOR  1.04
BAG RESULTS
   TEST CYCLE                                 C-ID

   BLOWER DIF P MM. H2O(IN. H2O)           774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)         769.6 (30.3)
   BLOWER INLET TEMP. DEG. C(DEG. F)        44.4 (112.0)
   BLOWER REVOLUTIONS                        24094.
   TOT FLOW STD. CU. METRES(SCF)            44.4 ( 1569.)
   HC  SAMPLE METER/RANGE/PPM              38.4/ 3/ 384.
   HC  BCKGRD METER/RANGE/PPM               1.4/ 3/  14.
   CO  SAMPLE METER/RANGE/PPM              80.3/ 2/4581.
   CO  BCKGRD METER/RANGE/PPM                .1/ 2/   4.
   CO2 SAMPLE METER/RANGE/PCT              68.7/ 3/ 1.24
   CO2 BCKGRD METER/RANGE/PCT               2.6/ 3/  .04
   NOX SAMPLE METER/RANGE/PPM              40.7/ 2/  41.
   NOX BCKGRD METER/RANGE/PPM               1.6/ 2/   2.
   DILUTION FACTOR                             7.82
   HC  CONCENTRATION PPM                      372.
   CO  CONCENTRATION PPM                     4377.
   CO2 CONCENTRATION PCT                      1.20
   NOX CONCENTRATION PPM                      39.3
   HC  MASS GRAMS                              9.52
   CO  MASS GRAMS                            226.36
   CO2 MASS GRAMS                            978.5
   NOX MASS GRAMS                              3.48
   RUN TIME                 SECONDS           300.
        DFC, WET (DRY)                      .872 ( .854)
        SCF, WET (DRY)                     1.000 ( .968)
        VOL (SCM)                             44.4
        SAM BLR (SCM)                         0.00

    TEST NUMBER,                             911
    BAROMETER,            MM HG              737.9
    HUMIDITY,             G/KG                12.0
    TEMPERATURE,          DEG C               23.9
    CARBON DIOXIDE,       G/MIN              195.7
    FUEL CONSUMPTION,     L/100MIN            11.65

    HYDROCARBONS,         G/MIN                1.91
    CARBON MONOXIDE,      G/MIN               45.28
    OXIDES OF NITROGEN,   G/MIN                 .70


                         H-IDLE- VEHICLE EMISSIONS RESULTS -FAIRLANE BASELINE
                                  PROJECT 05-6619-004

TEST NO. 911        RUN 1                  VEHICLE NO.91                TEST WEIGHT  1814. KG( 4000. LBS)
VEHICLE MODEL   70 FORD FAIRLANE           DATE     5/24/82             ACTUAL ROAD LOAD   8.9 KW( 12.0 HP)
ENGINE 4.9 L(302. CID) V-8                 BAG CART NO.  1              GASOLINE      EM-516-F
TRANSMISSION A3                            DYNO NO.      3              ODOMETER ****** KM(67594. MILES)
                                           CVS NO.   2

BAROMETER 737.87 MM HG(29.05 IN HG)        DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
RELATIVE HUMIDITY  66. PCT                 ABS. HUMIDITY 12.7 GM/KG     NOX HUMIDITY CORRECTION FACTOR  1.07
BAG RESULTS
   TEST CYCLE                                 H-ID

   BLOWER DIF P MM. H2O(IN. H2O)           774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)         774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)        43.3 (110.0)
   BLOWER REVOLUTIONS                        24096.
   TOT FLOW STD. CU. METRES(SCF)            44.5 ( 1571.)
   HC  SAMPLE METER/RANGE/PPM              60.8/ 2/  61.
   HC  BCKGRD METER/RANGE/PPM              13.4/ 2/  13.
   CO  SAMPLE METER/RANGE/PPM              59.7/13/  57.
   CO  BCKGRD METER/RANGE/PPM               1.6/13/   1.
   CO2 SAMPLE METER/RANGE/PCT              36.2/ 3/  .61
   CO2 BCKGRD METER/RANGE/PCT               2.6/ 3/  .04
   NOX SAMPLE METER/RANGE/PPM               5.5/ 2/   6.
   NOX BCKGRD METER/RANGE/PPM               1.4/ 2/   1.
   DILUTION FACTOR                            21.64
   HC  CONCENTRATION PPM                      48.
   CO  CONCENTRATION PPM                      54.
   CO2 CONCENTRATION PCT                      .57
   NOX CONCENTRATION PPM                      4.2
   HC  MASS GRAMS                              1.23
   CO  MASS GRAMS                              2.79
   CO2 MASS GRAMS                            464.0
   NOX MASS GRAMS                               .38
   RUN TIME                 SECONDS           300.
        DFC, WET (DRY)                      .954 ( .933)
        SCF, WET (DRY)                     1.000 ( .973)
        VOL (SCM)                             44.5
        SAM BLR (SCM)                         0.00

    TEST NUMBER,                             911
    BAROMETER,            MM HG              737.9
    HUMIDITY,             G/KG                12.7
    TEMPERATURE,          DEG C               23.9
    CARBON DIOXIDE,       G/ MIN              92.8
    FUEL CONSUMPTION,     L/100MIN             4.03

    HYDROCARBONS,         G/MIN                 .25
    CARBON MONOXIDE,      G/MIN                 .36
    OXIDES OF NITROGEN,   G/MIN                 .08
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TABLE D-1 (Cont'd). TEST NO. 911 EMISSION RESULTS

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                                         C-NYCC  VEHICLE EMISSIONS RESULTS    FAIRLANE BASELINE
                                                 PROJECT 05-6619-004

TEST NO.  911       RUN   2                      VEHICLE NO.91                        TEST WEIGHT  1814. KG( 4000. LBS)
VEHICLE MODEL   70 FORD FAIRLANE                 DATE     5/26/82                     ACTUAL ROAD LOAD   8.9 KW( 12.0 HP)
ENGINE 4.9 L(302. CID) V-8                       BAG CART NO.  1                      GASOLINE   EM-516-F
TRANSMISSION A3                                  DYNO NO.       3                     ODOMETER ****** KM(67602. MILES)
                                                 CVS NO.    2

BAROMETER 735.58 MM HG(28.96 IN HG)              DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
RELATIVE HUMIDITY  59. PCT                       ABS. HUMIDITY 11.3 GM/KG             NOX HUMIDITY CORRECTION FACTOR  1.02
BAG RESULTS
   TEST CYCLE                                      C-NY

   BLOWER DIF P MM. H2O(IN. H2O)                774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)              774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)             42.8 (109.0)
   BLOWER REVOLUTIONS                              57944.
   TOT FLOW STD. CU. METRES(SCF)                106.7 ( 3768.)
   HC  SAMPLE METER/RANGE/PPM                   17.5/ 3/ 175.
   HC  BCKGRD METER/RANGE/PPM                    1.2/ 3/  12.
   CO  SAMPLE METER/RANGE/PPM                   62.6/ 3/1589.
   CO  BCKGRD METER/RANGE/PPM                     .1/ 3/   2.
   CO2 SAMPLE METER/RANGE/PCT                   48.5/ 3/  .84
   CO2 BCKGRD METER/RANGE/PCT                    2.8/ 3/  .04
   NOX SAMPLE METER/RANGE/PPM                   12.8/ 2/  13.
   NOX BCKGRD METER/RANGE/PPM                    1.1/ 2/   1.
   DILUTION FACTOR                                  13.28
   HC  CONCENTRATION PPM                            164.
   CO  CONCENTRATION PPM                           1531.
   CO2 CONCENTRATION PCT                             .80
   NOX CONCENTRATION PPM                            11.8
   HC  MASS GRAMS                                   10.09
   CO  MASS GRAMS                                  190.24
   CO2 MASS GRAMS                                  1560.4
   NOX MASS GRAMS                                    2.45
   RUN TIME                SECONDS                  722.
        DFC, WET (DRY)                          .925 ( .907)
        SCF, WET (DRY)                         1.000 ( .973)
        VOL (SCM)                                  106.7
        SAM BLR (SCM)                               0.00
        KM  (MEASURED)                               .82

   TEST NUMBER,                                     911
   BAROMETER,              MM HG                  735.6
   HUMIDITY,               G/KG                    11.3
   TEMPERATURE,            DEG C                   23.9
   CARBON DIOXIDE,         G/KM                  1905.7      G/MIN        129.7
   FUEL CONSUMPTION,       L/100KM                 98.59     L/100 MIN      6.72

   HYDROCARBONS,           G/KM                    12.32     G/MIN          0.84
   CARBON MONOXIDE,        G/KM                   232.00     G/MIN         15.81
   OXIDES OF NITROGEN,     G/KM                     2.99     G/MIN          0.20
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                                         H-NYCC- VEHICLE EMISSIONS RESULTS - FAIRLANE BASELINE
                                                 PROJECT 05-6619-004

TEST NO.  911       RUN 1                        VEHICLE NO.91                        TEST WEIGHT  1814. KG( 4000. LBS)
VEHICLE MODEL   70 FORD FAIRLANE                 DATE     5/24/82                     ACTUAL ROAD LOAD   8.9 KW( 12.0 HP)
ENGINE 4.9 L(302. CID) V-8                       BAG CART NO.  1                      GASOLINE      EM-516-F
TRANSMISSION A3                                  DYNO NO.       3                     ODOMETER ****** KM(67594. MILES)
                                                 CVS NO.    2

BAROMETER 737.62 MM HG(29.04 IN HG)              DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)
RELATIVE HUMIDITY  59. PCT                       ABS. HUMIDITY 11.7 GM/KG             NOX HUMIDITY CORRECTION FACTOR  1.03
BAG RESULTS
   TEST CYCLE                                      H-NY

   BLOWER DIF P MM. H2O(IN. H2O)                774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)              774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)             42.8 (109.0)
   BLOWER REVOLUTIONS                              58316.
   TOT FLOW STD. CU. METRES(SCF)                107.7 ( 3804.)
   HC  SAMPLE METER/RANGE/PPM                   70.5/ 2/  71.
   HC  BCKGRD METER/RANGE/PPM                   13.0/ 2/  13.
   CO  SAMPLE METER/RANGE/PPM                   54.1/12/ 116.
   CO  BCKGRD METER/RANGE/PPM                    1.0/12/   2.
   CO2 SAMPLE METER/RANGE/PCT                   42.1/ 3/  .72
   CO2 BCKGRD METER/RANGE/PCT                    2.4/ 3/  .04
   NOX SAMPLE METER/RANGE/PPM                   15.0/ 2/  15.
   NOX BCKGRD METER/RANGE/?PM                    1.3/ 2/   1.
   DILUTION FACTOR                                  18.23
   HC  CONCENTRATION PPM                             58.
   CO  CONCENTRATION PPM                            111.
   CO2 CONCENTRATION PCT                             .68
   NOX CONCENTRATION PPM                            13.8
   HC  MASS GRAMS                                    3.62
   CO  MASS GRAMS                                   13.88
   CO2 MASS GRAMS                                  1345.6
   NOX MASS GRAMS                                    2.94
   RUN TIME                SECONDS                  728.
        DFC, WET (DRY)                          .945 ( .927)
        SCF, WET (DRY)                         1.000 ( .974)
        VOL (SCM)                                  107.7
        SAM BLR (SCM)                               0.00
        KM  (MEASURED)                               .76

   TEST NUMBER,                                     911
   BAROMETER,              MM HG                  737.6
   HUMIDITY,               G/KG                    11.7
   TEMPERATURE,            DEG C                   24.4
   CARBON DIOXIDE,         G/KM                  1761.7
   FUEL CONSUMPTION,       L/100KM                 77.05          G/MIN        110.9
                                                                  L/100MIN       4.83
   HYDROCARBONS,           G/KM                     4.73          G/MIN          0.30
   CARBON MONOXIDE,        G/KM                    18.17          G/MIN          1.14
   OXIDES OF NITROGEN,     G/KM                     3.84          G/MIN          0.24
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TABLE D-2. TEST NO. 912 EMISSION RESULTS

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                                                      C IDLE  VEHICLE EMISSIONS RESULTS   FAIRLANE BASELINE
                                                              PROJECT 05-6619-004

TEST NO.   912      RUN   1                           VEHICLE NO.91                            TEST WEIGHT  1814. KG( 4000. LBS)
VEHICLE MODEL   70 FORD FAIRLANE                      DATE     5/25/82                         ACTUAL ROAD LOAD   0.9 KW( 12.0 HP)
ENGINE 4.9 L(302. CID) V-8                            BAG CART NO.  1                          GASOLINE       EM-516-F
TRANSMISSION A3                                       DYNO NO.       3                         ODOMETER ****** KM(67602. MILES)
                                                      CVS NO.   2

BAROMETER 736.85 MM HG(29.01 IN HG)                   DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)
RELATIVE HUMIDITY  56. PCT                            ADS. HUMIDITY 11.0 GM/KG                 NOX HUMIDITY CORRECTION FACTOR  1.01
BAG RESULTS
   TEST CYCLE                                            C-ID

   BLOWER DIF P MM. H2O(IN. H2O)                      767.1 (30.2)
   BLOWER INLET P MM. H2O(IN. H2O)                    767.1 (30.2)
   BLOWER INLET TEMP. DEG. C(DEG. F)                   43.3 (110.0)
   BLOWER REVOLUTIONS                                    24039.
   TOT FLOW STD. CU. METRES(SCF)                       44.4 ( 1566.)
   HC  SAMPLE METER/RANGE/PPM                         40.4/ 3/ 404.
   HC  BCKGRD METER/RANGE/PPM                          1.5/ 3/  15.
   CO  SAMPLE METER/RANGE/PPM                         83.2/ 2/4055.
   CO  BCKGRD METER/RANGE/PPM                           .1/ 2/   4.
   CO2 SAMPLE METER/RANGE/PCT                         69.0/ 3/ 1.24
   CO2 BCKGRD METER/RANGE/PCT                          2.8/ 3/  .04
   NOX SAMPLE METER/RANGE/PPM                         41.8/ 2/  42.
   NOX BCKGRD METER/RANGE/PPM                          1.2/ 2/   1.
   DILUTION FACTOR                                        7.66
   HC  CONCENTRATION PPM                                 391.
   CO  CONCENTRATION PPM                                4649.
   CO2 CONCENTRATION PCT                                 1.21
   NOX CONCENTRATION PPM                                 40.8
   HC  MASS GRAMS                                        10.00
   CO  MASS GRAMS                                       240.09
   CO2 MASS GRAMS                                       980.0
   NOX MASS GRAMS                                         3.49
   RUN TIME              SECONDS                        299.
       DFC, WET (DRY)                                 .869 ( .854)
       SCF, WET (DRY)                                1.000 ( .971)
       VOL (SCM)                                         44.4
       SAM BLR (SCM)                                     0.00

   TEST NUMBER,                                         912
   BAROMETER,             MM HG                         736.9
   HUMIDITY,              G/KG                           11.0
   TEMPERATURE,           DEG C                          24.4
   CARBON DIOXIDE,        G/KM                          196.8
   FUEL CONSUMPTION,      L/100 MIN                      11.90

   HYDROCARBONS,          G/MIN                          1.99
   CARBON MONOXIDE,       G/MIN                         47.87
   OXIDES OF NITROGEN,    G/MIN                          0.70
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                                                      H IDLE  VEHICLE EMISSIONS RESULTS   FAIRLANE BASELINE
                                                              PROJECT 05-6619-004

TEST NO.   912      RUN   1                           VEHICLE NO.91                            TEST WEIGHT  1814. KG( 4000. LBS)
VEHICLE MODEL   70 FORD FAIRLANE                      DATE     5/25/82                         ACTUAL ROAD LOAD   8.9 KW( 12.0 HP)
ENGINE 4.9 L(302. CID) V-8                            BAG CART NO.  1                          GASOLINE       EM-516-F
TRANSMISSION A3                                       DYNO NO.       3                         ODOMETER ****** KM(67602. MILES)
                                                      CVS NO.   2

BAROMETER 736.85 MM HG(29.01 IN HG)                   DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)
RELATIVE HUMIDITY  56. PCT                            ADS. HUMIDITY 11.0 GM/KG                 NOX HUMIDITY CORRECTION FACTOR  1.01
BAG RESULTS
   TEST CYCLE                                            H-ID

   BLOWER DIF P MM. H2O(IN. H2O)                      767.1 (30.2)
   BLOWER INLET P MM. H2O(IN. H2O)                    767.1 (30.2)
   BLOWER INLET TEMP. DEG. C(DEG. F)                   43.3 (110.0)
   BLOWER REVOLUTIONS                                    24048.
   TOT FLOW STD. CU. METRES(SCF)                       44.4 ( 1567.)
   HC  SAMPLE METER/RANGE/PPM                         60.5/ 2/  61.
   HC  BCKGRD METER/RANGE/PPM                         13.8/ 2/  14.
   CO  SAMPLE METER/RANGE/PPM                         61.8/13/  59.
   CO  BCKGRD METER/RANGE/PPM                          2.1/13/   2.
   CO2 SAMPLE METER/RANGE/PCT                         36.5/ 3/  .61
   CO2 BCKGRD METER/RANGE/PCT                          2.4/ 3/  .04
   NOX SAMPLE METER/RANGE/PPM                          5.4/ 2/   5.
   NOX BCKGRD METER/RANGE/PPM                           .8/ 2/   1.
   DILUTION FACTOR                                       21.44
   HC  CONCENTRATION PPM                                  47.
   CO  CONCENTRATION PPM                                  56.
   CO2 CONCENTRATION PCT                                  .58
   NOX CONCENTRATION PPM                                  4.6
   HC  MASS GRAMS                                         1.21
   CO  MASS GRAMS                                         2.88
   CO2 MASS GRAMS                                       469.8
   NOX MASS GRAMS                                          .40
   RUN TIME              SECONDS                        300.
       DFC, WET (DRY)                                 .953 ( .936)
       SCF, WET (DRY)                                1.000 ( .976)
       VOL (SCM)                                         44.4
       SAM BLR (SCM)                                     0.00

   TEST NUMBER,                                         912
   BAROMETER,             MM HG                         736.9
   HUMIDITY,              G/KG                           11.0
   TEMPERATURE,           DEG C                          24.4
   CARBON DIOXIDE,        G/MIN                          94.0
   FUEL CONSUMPTION,      L/100MIN                        4.08

   HYDROCARBONS,          G/MIN                           .24
   CARBON MONOXIDE,       G/MIN                           .58
   OXIDES OF NITROGEN,    G/MIN                           .08
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TABLE D-2 (Cont'd). TEST NO. 912 EMISSION RESULTS

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                                   C NYCC  VEHICLE EMISSIONS RESULTS   FAIRLANE BASELINE
                                           PROJECT 05-6619-004

TEST NO. 912       RUN   1                  VEHICLE NO.91                  TEST WEIGHT  1814. KG( 4000. LBS)
VEHICLE MODEL   70 FORD FAIRLANE            DATE    5/25/82                ACTUAL ROAD LOAD   8.9 KW( 12.0 HP)
ENGINE 4.9 L(302. CID) V-8                  BAG CART NO.  1                GASOLINE    EM-516-F
TRANSMISSION A3                             DYNO NO.      3                ODOMETER ****** KM(67602. MILES)
                                            CVS NO.   2

BAROMETER 736.85 MM HG(29.01 IN HG)         DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)
RELATIVE HUMIDITY  56. PCT                  ABS. HUMIDITY 11.0 GM/KG       NOX HUMIDITY CORRECTION FACTOR  1.01
BAG RESULTS
   TEST CYCLE                                  C-NY

   BLOWER DIF P MM. H2O(IN. H2O)            774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)          774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)         43.3 (110.0)
   BLOWER REVOLUTIONS                          57991.
   TOT FLOW STD. CU. METRES(SCF)            106.9 ( 3775.)
   HC  SAMPLE METER/RANGE/PPM               90.0/ 2/  90.
   HC  BCKGRD METER/RANGE/PPM               13.6/ 2/  14.
   CO  SAMPLE METER/RANGE/PPM               16.2/ 3/ 371.
   CO  BCKGRD METER/RANGE/PPM                 .1/ 3/   2.
   CO2 SAMPLE METER/RANGE/PCT               48.0/ 3/  .83
   CO2 BCKGRD METER/RANGE/PCT                2.6/ 3/  .04
   NOX SAMPLE METER/RANGE/PPM               14.4/ 2/  14.
   NOX BCKGRD METER/RANGE/PPM                 .5/ 2/   1.
   DILUTION FACTOR                             15.33
   HC  CONCENTRATION PPM                       85.
   CO  CONCENTRATION PPM                      356.
   CO2 CONCENTRATION PCT                        .79
   NOX CONCENTRATION PPM                       13.9
   HC  MASS GRAMS                               5.26
   CO  MASS GRAMS                              44.31
   CO2 MASS GRAMS                            1549.2
   NOX MASS GRAMS                               2.88
   RUN TIME               SECONDS             723.
       DFC, WET (DRY)                       .935 ( .918)
       SCF, WET (DRY)                      1.000 ( .974)
       VOL (SCM)                              106.9
       SAM BLR (SCM)                            0.00
       KM  (MEASURED)                            .82

    TEST NUMBER,                              912
    BAROMETER,            MM HG                736.9
    HUMIDITY,             G/KG                  11.0
    TEMPERATURE,          DEG C                 24.4
    CARBON DIOXIDE,       G/KM                1899.9      G/MIN        128.6
    FUEL CONSUMPTION,     L/100KM               85.61      L/100 MIN    5.83

    HYDROCARBONS,         G/KM                   6.45      G/MIN        0.44
    CARBON MONOXIDE,      G/KM                  54.34      G/MIN        3.68
    OXIDES OF NITROGEN,   G/KM                   3.53      G/MIN        0.24
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                                   H NYCC  VEHICLE EMISSIONS RESULTS   FAIRLANE BASELINE
                                           PROJECT 05-6619-004

TEST NO.   912     RUN   1                  VEHICLE NO.91                  TEST WEIGHT  1814. KG( 4000. LBS)
VEHICLE MODEL   70 FORD FAIRLANE            DATE    5/25/82                ACTUAL ROAD LOAD   8.9 KW( 12.0 HP)
ENGINE 4.9 L(302. CID) V 8                  BAG CART NO.  1                GASOLINE    EM-516-F
TRANSMISSION A3                             DYNO NO.      3                ODOMETER ****** KM(67602. MILES)
                                            CVS NO.   2

BAROMETER 736.85 MM HG(29.01 IN HG)         DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)
RELATIVE HUMIDITY  56. PCT                  ABS. HUMIDITY 11.0 GM/KG       NOX HUMIDITY CORRECTION FACTOR  1.01
BAG RESULTS
   TEST CYCLE                                  H-NY

   BLOWER DIF P MM. H2O(IN. H2O)            774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)          774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)         43.3 (110.0)
   BLOWER REVOLUTIONS                          57954.
   TOT FLOW STD. CU. METRES(SCF)            106.8 ( 3772.)
   HC  SAMPLE METER/RANGE/PPM               65.5/ 2/  66.
   HC  BCKGRD METER/RANGE/PPM               12.3/ 2/  12.
   CO  SAMPLE METER/RANGE/PPM               52.7/12/ 113.
   CO  BCKGRD METER/RANGE/PPM                 .9/12/   2.
   CO2 SAMPLE METER/RANGE/PCT               42.0/ 3/  .72
   CO2 BCKGRD METER/RANGE/PCT                2.5/ 3/  .04
   NOX SAMPLE METER/RANGE/PPM               13.7/ 2/  14.
   NOX BCKGRD METER/RANGE/PPM                 .7/ 2/   1.
   DILUTION FACTOR                             18.29
   HC  CONCENTRATION PPM                       54.
   CO  CONCENTRATION PPM                      108.
   CO2 CONCENTRATION PCT                        .68
   NOX CONCENTRATION PPM                       13.0
   HC  MASS GRAMS                               3.32
   CO  MASS GRAMS                              13.37
   CO2 MASS GRAMS                            1327.0
   NOX MASS GRAMS                               2.69
   RUN TIME               SECONDS             723.
       DFC, WET (DRY)                       .945 ( .928)
       SCF, WET (DRY)                      1.000 ( .975)
       VOL (SCM)                              106.8
       SAM BLR (SCM)                            0.00
       KM  (MEASURED)                            .81

    TEST NUMBER,                              912
    BAROMETER,            MM HG                736.9
    HUMIDITY,             G/KG                  11.0
    TEMPERATURE,          DEG C                 24.4
    CARBON DIOXIDE,       G/KM                1635.3      G/MIN        110.2
    FUEL CONSUMPTION,     L/100KM               71.46      L/100MIN      4.80

    HYDROCARBONS,         G/KM                   4.09      G/MIN         0.28
    CARBON MONOXIDE,      G/KM                  16.47      G/MIN         1.11
    OXIDES OF NITROGEN,   G/KM                   3.31      G/MIN         0.22
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TABLE D-3. TEST NO. 916 EMISSION RESULTS

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                                        C-IDLE- VEHICLE EMISSIONS RESULTS - FAIRLANE RICH BEST IDLE
                                                PROJECT 05-6619-004

TEST NO.   916      RUN 1                     VEHICLE NO.91
VEHICLE MODEL    70 FORD FAIRLANE             DATE      5/18/82              TEST WEIGHT  1814. KG( 4000. LBS)
ENGINE 4.9 L(302. CID) V-8                    BAG CART NO.  1              ACTUAL ROAD LOAD   8.9 KW( 12.0 HP)
TRANSMISSION A3                               DYNO NO.      3              GASOLINE EM-516-F
                                              CVS NO.   2                  ODOMETER ****** KM(67491. MILES)

BAROMETER 742.19 MM HG(29.22 IN HG)           DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)
RELATIVE HUMIDITY  63. PCT                    ABS. HUMIDITY 12.4 GM/KG
BAG RESULTS                                                                NOX HUMIDITY CORRECTION FACTOR  1.06
   TEST CYCLE                                      C-ID

   BLOWER DIF P MM. H2O(IN. H2O)              812.8 (32.0)
   BLOWER INLET P MM. H2O(IN. H2O)            800.1 (31.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)           44.4 (112.0)
   BLOWER REVOLUTIONS                            24166.
   TOT FLOW STD. CU. METRES(SCF)                44.6 ( 1576.)
   HC   SAMPLE METER/RANGE/PPM                39.6/ 3/ 396.
   HC   BCKGRD METER/RANGE/PPM                 1.5/ 3/  15.
   CO   SAMPLE METER/RANGE/PPM                84.0/ 2/4933.
   CO   BCKGRD METER/RANGE/PPM                  .1/ 2/   4.
   CO2  SAMPLE METER/RANGE/PCT                70.1/ 3/ 1.27
   CO2  BCKGRD METER/RANGE/PCT                 2.8/ 3/  .04
   NOX  SAMPLE METER/RANGE/PPM                40.9/ 2/  41.
   NOX  BCKGRD METER/RANGE/PPM                  .8/ 2/   1.
   DILUTION FACTOR                                7.54
   HC   CONCENTRATION PPM                        383.
   CO   CONCENTRATION PPM                       4710.
   CO2  CONCENTRATION PCT                        1.23
   NOX  CONCENTRATION PPM                        40.2
   HC   MASS GRAMS                                9.86
   CO   MASS GRAMS                              244.75
   CO2  MASS GRAMS                              1004.4
   NOX  MASS GRAMS                                3.63
   RUN TIME               SECONDS                301.
        DFC, WET (DRY)                        .867 ( .850)
        SCF, WET (DRY)                       1.000 ( .968)
        VOL (SCM)                                 44.6
        SAM BLR (SCM)                             0.00

   TEST NUMBER,                                  916
   BAROMETER,              MM HG                 742.2
   HUMIDITY,               G/KG                   12.4
   TEMPERATURE,            DEG C                  24.4
   CARBON DIOXIDE,         G/MIN                 200.2
   FUEL CONSUMPTION,       L/100 MIN              12.09

   HYDROCARBONS,           G/MIN                   1.96
   CARBON MONOXIDE,        G/MIN                  48.78
   OXIDES OF NITROGEN,     G/MIN                   0.72
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                                        H-IDLE- VEHICLE EMISSIONS RESULTS - FAIRLANE RICH BEST IDLE
                                                PROJECT 05-6619-004

TEST NO.   916      RUN 1                     VEHICLE NO.91
VEHICLE MODEL    70 FORD FAIRLANE             DATE      5/18/82              TEST WEIGHT  1814. KG( 4000. LBS)
ENGINE 4.9 L(302. CID) V-8                    BAG CART NO.  1              ACTUAL ROAD LOAD   8.9 KW( 12.0 HP)
TRANSMISSION A3                               DYNO NO.      3              GASOLINE  EM-516-F
                                              CVS NO.   2                  ODOMETER 10861. KM( 6749. MILES)

BAROMETER 742.19 MM HG(29.22 IN HG)           DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)
RELATIVE HUMIDITY  56. PCT                    ABS. HUMIDITY 10.9 GM/KG
BAG RESULTS                                                                NOX HUMIDITY CORRECTION FACTOR  1.01
   TEST CYCLE                                      H-ID

   BLOWER DIF P MM. H2O(IN. H2O)              787.4 (31.0)
   BLOWER INLET P MM. H2O(IN. H2O)            787.4 (31.0)
   BLOWER INLET TEMP. DEG. C(DEG. F)           43.3 (110.0)
   BLOWER REVOLUTIONS                            23883.
   TOT FLOW STD. CU. METRES(SCF)                44.3 ( 1564.)
   HC   SAMPLE METER/RANGE/PPM                13.2/ 3/ 132.
   HC   BCKGRD METER/RANGE/PPM                 1.3/ 3/  13.
   CO   SAMPLE METER/RANGE/PPM                67.5/ 3/1742.
   CO   BCKGRD METER/RANGE/PPM                  .2/ 3/   5.
   CO2  SAMPLE METER/RANGE/PCT                30.2/ 3/  .50
   CO2  BCKGRD METER/RANGE/PCT                 2.1/ 3/  .03
   NOX  SAMPLE METER/RANGE/PPM                 5.1/ 2/   5.
   NOX  BCKGRD METER/RANGE/PPM                 1.4/ 2/   1.
   DILUTION FACTOR                               19.65
   HC   CONCENTRATION PPM                        120.
   CO   CONCENTRATION PPM                       1689.
   CO2  CCNCENTRATION PCT                         .47
   NOX  CONCENTRATION PPM                         3.8
   HC   MASS GRAMS                                3.06
   CO   MASS GRAMS                               87.12
   CO2  MASS GRAMS                               380.2
   NOX  MASS GRAMS                                 .32
   RUN TIME               SECONDS                298.
        DFC, WET (DRY)                        .949 ( .932)
        SCF, WET (DRY)                       1.000 ( .977)
        VOL (SCM)                                 44.3
        SAM BLR (SCM)                             0.00

   TEST NUMBER,                                  916
   BAROMETER,              MM HG                 742.2
   HUMIDITY,               G/KG                   10.9
   TEMPERATURE,            DEG C                  24.4
   CARBON DIOXIDE,         G/MIN                  76.6
   FUEL CONSUMPTION,       L/100 MIN               4.53

   HYDROCARBONS,           G/MIN                   .61
   CARBON MONOXIDE,        G/MIN                 17.55
   OXIDES OF NITROGEN,     G/MIN                   .06
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TABLE D-3 (Cont'd). TEST NO. 916 EMISSION RESULTS

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                                        C-NYCC- VEHICLE EMISSIONS RESULTS - FAIRLANE RICH BEST IDLE
                                                PROJECT 05-6619-004

TEST NO.  916     RUN 1                          VEHICLE NO.91                          TEST WEIGHT  1814. KG( 4000. LBS)
VEHICLE MODEL   70 FORD FAIRLANE                 DATE    5/18/82                        ACTUAL ROAD LOAD   8.9 KW( 12.0 HP)
ENGINE 4.9 L(302. CID) V-8                       BAG CART NO.  1                        GASOLINE EM-516-F
TRANSMISSION A3                                  DYNO NO.      3                        ODOMETER 10861. KM( 6749. MILES)
                                                 CVS NO.   2

BAROMETER 742.44 MM HG(29.23 IN HG)              DRY BULB TEMP. 25.0 DEG C(77.0 DEG F)
RELATIVE HUMIDITY  53. PCT                       ABS. HUMIDITY 10.7 GM/KG               NOX HUMIDITY CORRECTION FACTOR  1.00
BAG RESULTS
  TEST CYCLE                                        C-NY

  BLOWER DIF P MM. H2O(IN. H2O)                 774.7 (30.5)
  BLOWER INLET P MM. H2O(IN. H2O)               774.7 (30.5)
  BLOWER INLET TEMP. DEG. C(DEG. F)              43.3 (110.0)
  BLOWER REVOLUTIONS                               57749.
  TOT FLOW STD. CU. METRES(SCF)                 107.3 ( 3790.)
  HC  SAMPLE METER/RANGE/PPM                    16.3/ 3/ 163.
  HC  BCKGRD METER/RANGE/PPM                     1.7/ 3/  17.
  CO  SAMPLE METER/RANGE/PPM                    84.5/ 3/2323.
  CO  BCKGRD METER/RANGE/PPM                      .4/ 3/   9.
  CO2 SAMPLE METER/RANGE/PCT                    40.5/ 3/  .69
  CO2 BCKGRD METER/RANGE/PCT                     3.2/ 3/  .05
  NOX SAMPLE METER/RANGE/PPM                    11.5/ 2/  12.
  NOX BCKGRD METER/RANGE/PPM                      .6/ 2/   1.
  DILUTION FACTOR                                  14.43
  HC  CONCENTRATION PPM                            147.
  CO  CONCENTRATION PPM                           2245.
  CO2 CONCENTRATION PCT                             .64
  NOX CONCENTRATION PPM                            10.9
  HC  MASS GRAMS                                    9.11
  CO  MASS GRAMS                                  280.52
  CO2 MASS GRAMS                                  1260.6
  NOX MASS GRAMS                                    2.24
  RUN TIME               SECONDS                   720.
      DFC, WET (DRY)                            .931 ( .915)
      SCF, WET (DRY)                           1.000 ( .977)
      VOL (SCM)                                    107.3
      SAM BLR (SCM)                                 0.00
      KM  (MEASURED)                                 .80

  TEST NUMBER,                                  916
  BAROMETER,             MM HG                     742.4
  HUMIDITY,              G/KG                       10.7
  TEMPERATURE,           DEG C                      25.0
  CARBON DIOXIDE,        G/KM                     1576.6          G/MIN          105.1
  FUEL CONSUMPTION,      L/100KM                    92.37         L/100 MIN        6.16

  HYDROCARBONS,          G/KM                       11.39         G/MIN            0.76
  CARBON MONOXIDE,       G/KM                      350.65         G/MIN           23.38
  OXIDES OF NITROGEN,    G/KM                        2.81         G/MIN            0.19

                                        H-NYCC- VEHICLE EMISSIONS RESULTS - FAIRLANE RICH BEST IDLE
                                                PROJECT 05-6619-004

TEST NO.  916     RUN 1                          VEHICLE NO.91                          TEST WEIGHT  1814. KG( 4000. LBS)
VEHICLE MODEL   70 FORD FAIRLANE                 DATE    5/18/82                        ACTUAL ROAD LOAD   8.9 KW( 12.0 HP)
ENGINE 4.9 L(302. CID) V-8                       BAG CART NO.  1                        GASOLINE  EM-516-F
TRANSMISSION A3                                  DYNO NO.      3                        ODOMETER 10861. KM( 6749. MILES)
                                                 CVS NO.   2

BAROMETER 740.16 MM HG(29.14 IN HG)              DRY BULB TEMP. 25.0 DEG C(77.0 DEG F)
RELATIVE HUMIDITY  53. PCT                       ABS. HUMIDITY 10.7 GM/KG               NOX HUMIDITY CORRECTION FACTOR  1.00
BAG RESULTS
  TEST CYCLE                                        H-NY

  BLOWER DIF P MM. H2O(IN. H2O)                 812.8 (32.0)
  BLOWER INLET P MM. H2O(IN. H2O)               787.4 (31.0)
  BLOWER INLET TEMP. DEG. C(DEG. F)              42.2 (108.0)
  BLOWER REVOLUTIONS                               57717.
  TOT FLOW STD. CU. METRES(SCF)                 106.8 ( 3772.)
  HC  SAMPLE METER/RANGE/PPM                    12.5/ 3/ 125.
  HC  BCKGRD METER/RANGE/PPM                     1.3/ 3/  13.
  CO  SAMPLE METER/RANGE/PPM                    68.0/ 3/1757.
  CO  BCKGRD METER/RANGE/PPM                      .2/ 3/   5.
  CO2 SAMPLE METER/RANGE/PCT                    35.1/ 3/  .59
  CO2 BCKGRD METER/RANGE/PCT                     2.2/ 3/  .03
  NOX SAMPLE METER/RANGE/PPM                    12.3/ 2/  12.
  NOX BCKGRD METER/RANGE/PPM                     1.5/ 2/   2.
  DILUTION FACTOR                                  17.38
  HC  CONCENTRATION PPM                            113.
  CO  CONCENTRATION PPM                           1704.
  CO2 CONCENTRATION PCT                             .56
  NOX CONCENTRATION PPM                            10.9
  HC  MASS GRAMS                                    6.95
  CO  MASS GRAMS                                  211.88
  CO2 MASS GRAMS                                  1087.4
  NOX MASS GRAMS                                    2.22
  RUN TIME               SECONDS                   720.
      DFC, WET (DRY)                            .942 ( .926)
      SCF, WET (DRY)                           1.000 ( .978)
      VOL (SCM)                                    106.8
      SAM BLR (SCM)                                 0.00
      KM  (MEASURED)                                 .79

  TEST NUMBER,                                  916
  BAROMETER,             MM HG                     740.2
  HUMIDITY,              G/KG                       10.7
  TEMPERATURE,           DEG C                      25.0
  CARBON DIOXIDE,        G/KM                     1382.5          G/MIN           90.6
  FUEL CONSUMPTION,      L/100KM                    78.27         L/100 MIN        5.15

  HYDROCARBONS,          G/KM                        8.83         G/MIN            0.58
  CARBON MONOXIDE,       G/KM                      268.20         G/MIN           17.66
  OXIDES OF NITROGEN,    G/KM                        2.83         G/MIN            0.19
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TABLE D-4. TEST NO. 917 EMISSION RESULTS

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                                          C-IDLE- VEHICLE EMISSIONS RESULTS - FAIRLANE RICH BEST IDLE
                                                      PROJECT 05-6619-004

TEST NO.   917      RUN   1                 VEHICLE NO.91                     TEST WEIGHT  1814. KG( 4000. LBS)
VEHICLE MODEL   70 FORD FAIRLANE            DATE     5/20/82                  ACTUAL ROAD LOAD   8.9 KW( 12.0 HP)
ENGINE 4.9 L(302. CID) V-8                  BAG CART NO.  1                   GASOLINE   EM-516-F
TRANSMISSION A3                             DYNO NO.      3                   ODOMETER ****** KM(67538. MILES)
                                            CVS NO.   2

BAROMETER 739.90 MM HG(29.13 IN HG)         DRY BULB TEMP. 25.6 DEG C(78.0 DEG F)
RELATIVE HUMIDITY  50. PCT                  ABS. HUMIDITY 10.5 GM/KG          NOX HUMIDITY CORRECTION FACTOR   .99
BAG RESULTS
   TEST CYCLE                                  C-ID

   BLOWER DIF P MM. H2O(IN. H2O)            774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)          767.1 (30.2)
   BLOWER INLET TEMP. DEG. C(DEG. F)         43.9 (111.0)
   BLOWER REVOLUTIONS                          24080.
   TOT FLOW STD. CU. METRES(SCF)             44.6 ( 1574.)
   HC  SAMPLE METER/RANGE/PPM              24.8/ 3/ 248.
   HC  BCKGRD METER/RANGE/PPM               1.6/ 3/  16.
   CO  SAMPLE METER/RANGE/PPM              76.0/ 3/2021.
   CO  BCKGRD METER/RANGE/PPM                .2/ 3/   5.
   CO2 SAMPLE METER/RANGE/PCT              44.0/ 3/  .75
   CO2 BCKGRD METER/RANGE/PCT               3.2/ 3/  .05
   NOX SAMPLE METER/RANGE/PPM               7.2/ 2/   7.
   NOX BCKGRD METER/RANGE/PPM               1.2/ 2/   1.
   DILUTION FACTOR                              13.77
   HC  CONCENTRATION PPM                        233.
   CO  CONCENTRATION PPM                       1955.
   CO2 CONCENTRATION PCT                          .71
   NOX CONCENTRATION PPM                          6.1
   HC  MASS GRAMS                                 5.99
   CO  MASS GRAMS                               101.50
   CO2 MASS GRAMS                               577.3
   NOX MASS GRAMS                                  .52
   RUN TIME               SECONDS               300.
        OFC, WET (DRY)                       .927 ( .912)
        SCF, WET (DRY)                      1.000 ( .977)
        VOL (SCM)                                44.6
        SAM BLR (SCM)                            0.00

   TEST NUMBER,                              917
   BAROMETER,             MM HG               739.9
   HUMIDITY,              G/KG                 10.5
   TEMPERATURE,           DEG C                25.6
   CARBON DIOXIDE,        G/MIN               115.5
   FUEL CONSUMPTION,      L/100 MIN             6.45

   HYDROCARBONS,          G/MIN                 1.20
   CARBON MONOXIDE,       G/MIN                20.30
   OXIDES OF NITROGEN,    G/MIN                  .10
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                                          H-IDLE- VEHICLE EMISSIONS RESULTS - FAIRLANE RICH BEST IDLE
                                                      PROJECT 05-6619-004

TEST NO.   917      RUN 1                   VEHICLE NO.91                     TEST WEIGHT  1814. KG( 4000. LBS)
VEHICLE MODEL   70 FORD FAIRLANE            DATE     5/20/82                  ACTUAL ROAD LOAD   8.9 KW( 12.0 HP)
ENGINE 4.9 L(302. CID) V-8                  BAG CART NO.  1                   GASOLINE EM-516-F
TRANSMISSION A3                             DYNO NO.      3                   ODOMETER ****** KM(67538. MILES)
                                            CVS NO.   2

BAROMETER 739.90 MM HG(29.13 IN HG)         DRY BULB TEMP. 25.6 DEG C(78.0 DEG F)
RELATIVE HUMIDITY  50. PCT                  ABS. HUMIDITY 10.5 GM/KG          NOX HUMIDITY CORRECTION FACTOR   .99
BAG RESULTS
   TEST CYCLE                                  H-ID

   BLOWER DIF P MM. H2O(IN. H2O)            779.8 (30.7)
   BLOWER INLET P MM. H2O(IN. H2O)          767.1 (30.2)
   BLOWER INLET TEMP. DEG. C(DEG. F)         43.3 (110.0)
   BLOWER REVOLUTIONS                          24065.
   TOT FLOW STD. CU. METRES(SCF)             44.6 ( 1575.)
   HC  SAMPLE METER/RANGE/PPM              12.2/ 3/ 122.
   HC  BCKGRD METER/RANGE/PPM               1.6/ 3/  16.
   CO  SAMPLE METER/RANGE/PPM              67.4/ 3/1738.
   CO  BCKGRD METER/RANGE/PPM                .1/ 3/   2.
   CO2 SAMPLE METER/RANGE/PCT              30.5/ 3/  .50
   CO2 BCKGRD METER/RANGE/PCT               3.2/ 3/  .05
   NOX SAMPLE METER/RANGE/PPM               4.1/ 2/   4.
   NOX BCKGRD METER/RANGE/PPM               1.0/ 2/   1.
   DILUTION FACTOR                              19.53
   HC  CONCENTRATION PPM                        107.
   CO  CONCENTRATION PPM                       1691.
   CO2 CONCENTRATION PCT                          .46
   NOX CONCENTRATION PPM                          3.2
   HC  MASS GRAMS                                 2.75
   CO  MASS GRAMS                                87.81
   CO2 MASS GRAMS                               374.0
   NOX MASS GRAMS                                  .27
   RUN TIME               SECONDS               300.
        DFC, WET (DRY)                       .949 ( .934)
        SCF, WET (DRY)                      1.000 ( .979)
        VOL (SCM)                                44.6
        SAM BLR (SCM)                            0.00

   TEST NUMBER,                              917
   BAROMETER,             MM HG               739.9
   HUMIDITY,              G/KG                 10.5
   TEMPERATURE,           DEG C                25.6
   CARBON DIOXIDE,        G/MIN                74.8
   FUEL CONSUMPTION,      L/100 MIN             4.45

   HYDROCARBONS,          G/MIN                  .55
   CARBON MONOXIDE,       G/MIN                17.57
   OXIDES OF NITROGEN,    G/MIN                  .05
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TABLE D-4 (Cont'd). TEST NO. 917 EMISSION RESULTS

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                                        C -NYCC- VEHICLE EMISSIONS RESULTS - FAIRLANE RICH BEST IDLE
                                                 PROJECT 05-6619-004

TEST NO.   917      RUN 1                        VEHICLE NO.91                        TEST WEIGHT  1814. KG( 4000. LBS)
VEHICLE MODEL   70 FORD FAIRLANE                 DATE     5/20/82                     ACTUAL ROAD LOAD   8.9 KW( 12.0 HP)
ENGINE 4.9 L(302. CID) V-8                       BAG CART NO.  1                      GASOLINE  EM-516-F
TRANSMISSION A3                                  DYNO NO.      3                      ODOMETER ****** KM(67550. MILES)
                                                 CVS NO.   2

BAROMETER 737.36 MM HG(29.03 IN HG)              DRY BULB TEMP. 26.7 DEG C(80.0 DEG F)
RELATIVE HUMIDITY  54. PCT                       ABS. HUMIDITY 12.3 GM/KG             NOX HUMIDITY CORRECTION FACTOR  1.05
BAG RESULTS
   TEST CYCLE                                       C-NY

   BLOWER DIF P MM. H2O(IN. H2O)                 774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)               774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)              43.3 (110.0)
   BLOWER REVOLUTIONS                               57795.
   TOT FLOW STD. CU. METRES(SCF)                 106.6 ( 3765.)
   HC   SAMPLE METER/RANGE/PPM                   20.1/ 3/ 201.
   HC   BCKGRD METER/RANGE/PPM                    1.3/ 3/  13.
   CO   SAMPLE METER/RANGE/PPM                   61.4/ 3/1553.
   CO   BCKGRD METER/RANGE/PPM                     .1/ 2/   4.
   CO2 SAMPLE METER/RANGE/PCT                    40.8/ 3/  .69
   CO2 BCKGRD METER/RANGE/PCT                     3.0/ 3/  .05
   NOX SAMPLE METER/RANGE/PPM                    10.4/ 2/  10.
   NOX BCKGRD METER/RANGE/PPM                      .8/ 2/   1.
   DILUTION FACTOR                                  15.52
   HC   CONCENTRATION PPM                           189.
   CO   CONCENTRATION PPM                          1502.
   CO2 CONCENTRATION PCT                             .65
   NOX CONCENTRATION PPM                            9.7
   HC   MASS GRAMS                                  11.61
   CO   MASS GRAMS                                 186.38
   CO2 MASS GRAMS                                  1268.1
   NOX MASS GRAMS                                    2.08
   RUN TIME                SECONDS                  721.
        DFC, WET (DRY)                           .936 ( .919)
        SCF, WET (DRY)                          1.000 ( .976)
        VOL (SCM)                                  106.6
        SAM BLR (SCM)                                0.00
        KM  (MEASURED)                               .79

   TEST NUMBER,                                  917
   BAROMETER,              MM HG                  737.4
   HUMIDITY,               G/KG                    12.3
   TEMPERATURE,            DEG C                   26.7
   CARBON DIOXIDE,         G/KM                  1604.0        G/MIN          105.5
   FUEL CONSUMPTION,       L/100KM                 86.26       L/100 MIN        5.67

   HYDROCARBONS,           G/KM                    14.68       G/MIN            0.97
   CARBON MONOXIDE,        G/KM                  235.92        G/MIN           15.51
   OXIDES OF NITROGEN,     G/KM                    2.62        G/MIN            0.17

                                        H - NYCC  - VEHICLE EMISSIONS RESULTS -  FAIRLANE RICH BEST IDLE
                                                 PROJECT 05-6619-004

TEST NO.   917      RUN   1                      VEHICLE NO.91                        TEST WEIGHT  1814. KG( 4000. LBS)
VEHICLE MODEL   70 FORD FAIRLANE                 DATE     5/20/82                     ACTUAL ROAD LOAD   8.9 KW( 12.0 HP)
ENGINE 4.9 L(302. CID) V-8                       BAG CART NO.  1                      GASOLINE  EM-516-F
TRANSMISSION A3                                  DYNO NO.      3                      ODOMETER ****** KM(67544. MILES)
                                                 CVS NO.   2

BAROMETER 739.90 MM HG(29.13 IN HG)              DRY BULB TEMP. 25.6 DEG C(78.0 DEG F)
RELATIVE HUMIDITY  50. PCT                       ABS. HUMIDITY 10.5 GM/KG             NOX HUMIDITY CORRECTION FACTOR   .99
BAG RESULTS
   TEST CYCLE                                       H-NY

   BLOWER DIF P MM. H2O(IN. H2O)                 784.9 (30.9)
   BLOWER INLET P MM. H2O(IN. H2O)               767.1 (30.2)
   BLOWER INLET TEMP. DEG. C(DEG. F)              42.8 (109.0)
   BLOWER REVOLUTIONS                               57764.
   TOT FLOW STD. CU. METRES(SCF)                 107.1 ( 3782.)
   HC   SAMPLE METER/RANGE/PPM                   12.4/ 3/ 124.
   HC   BCKGRD METER/RANGE/PPM                    1.5/ 3/  15.
   CO   SAMPLE METER/RANGE/PPM                   65.2/ 3/1669.
   CO   BCKGRD METER/RANGE/PPM                     .1/ 3/   2.
   CO2 SAMPLE METER/RANGE/PCT                    36.9/ 3/  .62
   CO2 BCKGRD METER/RANGE/PCT                     3.2/ 3/  .05
   NOX SAMPLE METER/RANGE/PPM                    11.6/ 2/  12.
   NOX BCKGRD METER/RANGE/PPM                      .8/ 2/   1.
   DILUTION FACTOR                                  16.85
   HC   CONCENTRATION PPM                           110.
   CO   CONCENTRATION PPM                          1620.
   CO2 CONCENTRATION PCT                             .57
   NOX CONCENTRATION PPM                           10.8
   HC   MASS GRAMS                                   6.79
   CO   MASS GRAMS                                 202.08
   CO2 MASS GRAMS                                  1126.5
   NOX MASS GRAMS                                    2.21
   RUN TIME                SECONDS                  721.
        DFC, WET (DRY)                           .941 ( .926)
        SCF, WET (DRY)                          1.000 ( .978)
        VOL (SCM)                                  107.1
        SAM BLR (SCM)                                0.00
        KM  (MEASURED)                               .78

   TEST NUMBER,                                  917
   BAROMETER,              MM HG                  739.9
   HUMIDITY,               G/KG                    10.5
   TEMPERATURE,            DEG C                   25.6
   CARBON DIOXIDE,         G/KM                  1451.3        G/MIN           93.7
   FUEL CONSUMPTION,       L/100KM                 80.59       L/100 MIN        5.23

   HYDROCARBONS,           G/KM                     8.75       G/MIN            0.57
   CARBON MONOXIDE,        G/KM                  259.08        G/MIN           16.82
   OXIDES OF NITROGEN,     G/KM                    2.84        G/MIN            0.18
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TABLE D-5. TEST NO. 921 EMISSION RESULTS

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                                        C-IDLE- VEHICLE EMISSIONS RESULTS - OLDS DELTA BASELINE
                                                PROJECT 05-6619-004

TEST NO.   921      RUN                         VEHICLE NO.92                          TEST WEIGHT  1928. KG( 4250. LBS)
VEHICLE MODEL   81 OLDS DELTA88                 DATE     6/29/82                       ACTUAL ROAD LOAD   8.4 KW( 11.3 HP)
ENGINE 5.7 L(350. CID) V-8                      BAG CART NO.  1                        DIESEL    EM-329-F
TRANSMISSION A3                                 DYNO NO.      2                        ODOMETER 59296. KM(36845. MILES)
                                                CVS NO.  17

BAROMETER 739.65 MM HG(29.12 IN HG)             DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
RELATIVE HUMIDITY  62. PCT                      ABS. HUMIDITY 11.9 GM/KG               NOX HUMIDITY CORRECTION FACTOR  1.04
BAG RESULTS
   TEST CYCLE                                     C-ID

   BLOWER DIF P MM. H2O(IN. H2O)                863.6 (34.0)
   BLOWER INLET P MM. H2O(IN. H2O)              863.6 (34.0)
   BLOWER INLET TEMP. DEG. C(DEG. F)             41.1 (106.0)
   BLOWER REVOLUTIONS                               2961.
   TOT FLOW STD. CU. METRES(SCF)                 69.7 ( 2462.)
   THC SAMPLE METER/RANGE/PPM                   26.9/11/  27.
   THC BCKGRD METER/RANGE/PPM                    7.7/ 1/   8.
   CO  SAMPLE METER/RANGE/PPM                   29.3/13/  27.
   CO  BCKGRD METER/RANGE/PPM                    2.2/13/   2.
   CO2 SAMPLE METER/RANGE/PCT                   25.6/ 3/  .42
   CO2 BCKGRD METER/RANGE/PCT                    3.1/ 3/  .05
   NOX SAMPLE METER/RANGE/PPM                    8.5/ 2/   9.
   NOX BCKGRD METER/RANGE/PPM                    1.0/ 2/   1.
   DILUTION FACTOR                                 31.65
   THC CONCENTRATION PPM                             19.
   CO  CONCENTRATION PPM                             24.
   CO2 CONCENTRATION PCT                             .37
   NOX CONCENTRATION PPM                             7.5
   THC MASS GRAMS                                     .78
   CO  MASS GRAMS                                    1.97
   CO2 MASS GRAMS                                   474.9
   NOX MASS GRAMS                                    1.05
   RUN TIME               SECONDS                   300.
        DFC, WET (DRY)                          .968 ( .949)
        SCF, WET (DRY)                         1.000 ( .976)
        VOL (SCM)                                   69.7
        SAM BLR (SCM)                                0.00


   TEST NUMBER,                                  921
   BAROMETER,              MM HG                  739.6
   HUMIDITY,               G/KG                    11.9
   TEMPERATURE,            DEG C                   23.9
   CARBON DIOXIDE,          G/MIN                  95.0
   FUEL CONSUMPTION,       L/100 MIN                3.58

   HYDROCARBONS, (THC)     G/MIN                    .16
   CARBON MONOXIDE,        G/MIN                    .39
   OXIDES OF NITROGEN,     G/MIN                    .21

                                        H-IDLE- VEHICLE EMISSIONS RESULTS - OLDS DELTA BASELINE
                                                PROJECT 05-6619-004

TEST NO.   921      RUN                         VEHICLE NO.92                          TEST WEIGHT  1928. KG( 4250. LBS)
VEHICLE MODEL   81 OLDS DELTA88                 DATE     6/29/82                       ACTUAL ROAD LOAD   8.4 KW( 11.3 HP)
ENGINE 5.7 L(350. CID) V-8                      BAG CART NO.  1                        DIESEL    EM-329-F
TRANSMISSION A3                                 DYNO NO.      2                        ODOMETER 59301. KM(36848. MILES)
                                                CVS NO.  17

BAROMETER 739.65 MM HG(29.12 IN HG)             DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
RELATIVE HUMIDITY  62. PCT                      ABS. HUMIDITY 11.9 GM/KG               NOX HUMIDITY CORRECTION FACTOR  1.04
BAG RESULTS
   TEST CYCLE                                     H-ID

   BLOWER DIF P MM. H2O(IN. H2O)                914.4 (36.0)
   BLOWER INLET P MM. H2O(IN. H2O)              889.0 (35.0)
   BLOWER INLET TEMP. DEG. C(DEG. F)             37.8 (100.0)
   BLOWER REVOLUTIONS                               2963.
   TOT FLOW STD. CU. METRES(SCF)                 70.0 ( 2471.)
   THC SAMPLE METER/RANGE/PPM                   28.0/11/  28.
   THC BCKGRD METER/RANGE/PPM                    7.7/ 1/   8.
   CO  SAMPLE METER/RANGE/PPM                   28.2/13/  26.
   CO  BCKGRD METER/RANGE/PPM                    1.5/13/   1.
   CO2 SAMPLE METER/RANGE/PCT                   24.2/ 3/  .39
   CO2 BCKGRD METER/RANGE/PCT                    2.9/ 3/  .04
   NOX SAMPLE METER/RANGE/PPM                    7.6/ 2/   8.
   NOX BCKGRD METER/RANGE/PPM                     .9/ 2/   1.
   DILUTION FACTOR                                 33.58
   THC CONCENTRATION PPM                             21.
   CO  CONCENTRATION PPM                             24.
   CO2 CONCENTRATION PCT                             .35
   NOX CONCENTRATION PPM                             6.7
   THC MASS CRAMS                                     .83
   CO  MASS GRAMS                                    1.94
   CO2 MASS GRAMS                                   449.3
   NOX MASS GRAMS                                     .94
   RUN TIME               SECONDS                   300.
        DFC, WET (DRY)                          .970 ( .951)
        SCF, WET (DRY)                         1.000 ( .976)
        VOL (SCM)                                   70.0
        SAM BLR (SCM)                                0.00


   TEST NUMBER,                                  921
   BAROMETER,              MM HG                  739.6
   HUMIDITY,               G/KG                    11.9
   TEMPERATURE,            DEG C                   23.9
   CARBON DIOXIDE,          G/MIN                  89.9
   FUEL CONSUMPTION,       L/100  MIN               3.39

   HYDROCARBONS, (THC)     G/MIN                    .17
   CARBON MONOXIDE,        G/MIN                    .39
   OXIDES OF NITROGEN,     G/MIN                    .19
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TABLE D-5 (Cont'd). TEST NO. 921 EMISSION RESULTS

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                                         C-NYCC- VEHICLE EMISSIONS RESULTS - OLDS DELTA BASELINE
                                                 PROJECT 05-6619-004

TEST NO.   921      RUN                         VEHICLE NO.92                  TEST WEIGHT  1928. KG( 4250. LBS)
VEHICLE MODEL   81 OLDS DELTA88                 DATE    6/29/82                ACTUAL ROAD LOAD   8.4 KW( 11.3 HP)
ENGINE 5.7 L(350. CID) V-8                      BAG CART NO.  1                DIESEL     EM-329-F
TRANSMISSION A3                                 DYNO NO.      2                ODOMETER 59314. KM(36856. MILES)
                                                CVS NO.  17

BAROMETER 737.36 MM HG(29.03 IN HG)             DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)
RELATIVE HUMIDITY  54. PCT                      ABS. HUMIDITY 10.1 GM/KG       NOX HUMIDITY CORRECTION FACTOR   .98
BAG RESULTS
  TEST CYCLE                                       C-NY

  BLOWER DIF P MM. H2O(IN. H2O)                 914.4 (36.0)
  BLOWER INLET P MM. H2O(IN. H2O)               889.0 (35.0)
  BLOWER INLET TEMP. DEG. C(DEG. F)              32.2 ( 90.0)
  BLOWER REVOLUTIONS                                7079.
  TOT FLOW STD. CU. METRES(SCF)                 169.4 ( 5981.)
  THC SAMPLE METER/RANGE/PPM                    39.9/11/  40.
  THC BCKGRD METER/RANGE/PPM                     8.3/ 1/   8.
  CO  SAMPLE METER/RANGE/PPM                    41.6/13/  39.
  CO  BCKGRD METER/RANGE/PPM                     9.6/13/   9.
  CO2 SAMPLE METER/RANGE/PCT                    26.8/ 3/  .44
  CO2 BCKGRD METER/RANGE/PCT                     2.7/ 3/  .04
  NOX SAMPLE METER/RANGE/PPM                     8.6/ 2/   9.
  NOX BCKGRD METER/RANGE/PPM                     1.0/ 2/   1.
  DILUTION FACTOR                                   29.99
  THC CONCENTRATION PPM                              32.
  CO  CONCENTRATION PPM                              30.
  CO2 CONCENTRATION PCT                              .40
  NOX CONCENTRATION PPM                              7.6
  THC MASS GRAMS                                    3.12
  CO  MASS GRAMS                                    5.83
  CO2 MASS GRAMS                                  1237.8
  NOX MASS GRAMS                                    2.42
  RUN TIME               SECONDS                    716.
      DFC, WET (DRY)                             .967 ( .950)
      SCF, WET (DRY)                            1.000 ( .978)
      VOL (SCM)                                    169.4
      SAM BLR (SCM)                                 0.00
      KM  (MEASURED)                                 .76

  TEST NUMBER,                                  921
  BAROMETER,             MM HG                   737.4
  HUMIDITY,              G/KG                     10.1
  TEMPERATURE,           DEG C                    23.3
  CARBON DIOXIDE,         G/KM                  1623.6        G/MIN        103.7
  FUEL CONSUMPTION,      L/100KM                 61.32        L/100 MIN     3.91

  HYDROCARBONS, (THC)    G/KM                     4.09        G/MIN         0.26
  CARBON MONOXIDE,       G/KM                     7.64        G/MIN         0.49
  OXIDES OF NITROGEN,    G/KM                     3.18        G/MIN         0.20
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                                         H NYCC- VEHICLE EMISSIONS RESULTS - OLDS DELTA BASELINE
                                                 PROJECT 05-6619-004

TEST NO.   921      RUN                         VEHICLE NO.92                  TEST WEIGHT  1928. KG( 4250. LBS)
VEHICLE MODEL   81 OLDS DELTA88                 DATE    6/29/82                ACTUAL ROAD LOAD   8.4 KW( 11.3 HP)
ENGINE 5.7 L(350. CID) V-8                      BAG CART NO.  1                DIESEL     EM-329-F
TRANSMISSION A3                                 DYNO NO.      2                ODOMETER 59308. KM(36852. MILES)
                                                CVS NO.  17

BAROMETER 739.65 MM HG(29.12 IN HG)             DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
RELATIVE HUMIDITY  62. PCT                      ABS. HUMIDITY 11.9 GM/KG       NOX HUMIDITY CORRECTION FACTOR  1.04
BAG RESULTS
  TEST CYCLE                                       H NY

  BLOWER DIF P MM. H2O(IN. H2O)                 914.4 (36.0)
  BLOWER INLET P MM. H2O(IN. H2O)               889.0 (35.0)
  BLOWER INLET TEMP. DEG. C(DEG. F)              38.9 (102.0)
  BLOWER REVOLUTIONS                                7083.
  TOT FLOW STD. CU. METRES(SCF)                 166.7 ( 5888.)
  THC SAMPLE METER/RANGE/PPM                    26.8/11/  27.
  THC BCKGRD METER/RANGE/PPM                     8.1/ 1/   8.
  CO  SAMPLE METER/RANGE/PPM                    27.4/13/  25.
  CO  BCKGRD METER/RANGE/PPM                     1.2/13/   1.
  CO2 SAMPLE METER/RANGE/PCT                    25.7/ 3/  .42
  CO2 BCKGRD METER/RANGE/PCT                     2.8/ 3/  .04
  NOX SAMPLE METER/RANGE/PPM                     7.9/ 2/   8.
  NOX BCKGRD METER/RANGE/PPM                     1.0/ 2/   1.
  DILUTION FACTOR                                   31.54
  THC CONCENTRATION PPM                              19.
  CO  CONCENTRATION PPM                              23.
  CO2 CONCENTRATION PCT                              .38
  NOX CONCENTRATION PPM                              6.9
  THC MASS GRAMS                                    1.83
  CO  MASS GRAMS                                    4.54
  CO2 MASS GRAMS                                  1155.0
  NOX MASS GRAMS                                    2.30
  RUN TIME               SECONDS                    717.
      DFC, WET (DRY)                             .968 ( .949)
      SCF, WET (DRY)                            1.000 ( .976)
      VOL (SCM)                                    166.7
      SAM BLR (SCM)                                 0.00
      KM  (MEASURED)                                 .81

  TEST NUMBER,                                  921
  BAROMETER,             MM HG                   739.6
  HUMIDITY,              G/KG                     11.9
  TEMPERATURE,           DEG C                    23.9
  CARBON DIOXIDE,         G/KM                  1433.4        G/MIN         96.7
  FUEL CONSUMPTION,      L/100KM                 53.91        L/100 MIN     3.65

  HYDROCARBONS, (THC)    G/KM                     2.27        G/MIN         0.15
  CARBON MONOXIDE,       G/KM                     5.63        G/MIN         0.38
  OXIDES OF NITROGEN,    G/KM                     2.86        G/MIN         0.19
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TABLE D-6. TEST NO. 922 EMISSION RESULTS

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                                             C-IDLE- VEHICLE EMISSIONS RESULTS - OLDS DELTA BASELINE
                                                  PROJECT 05-6619-004

TEST NO.   922      RUN   1                     VEHICLE NO.92                         TEST WEIGHT  1928. KG( 4250. LBS)
VEHICLE MODEL   81 OLDS DELTA 88                DATE    6/30/82                       ACTUAL ROAD LOAD   8.4 KW( 11.3 HP)
ENGINE 5.7 L(350. CID) V-8                      BAG CART NO.  1                       DIESEL    EM-329-F
TRANSMISSION A3                                 DYNO NO.      2                       ODOMETER 59314. KM(36856. MILES)
                                                CVS NO.  17

BAROMETER 741.93 MM HG(29.21 IN HG)             DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)
RELATIVE HUMIDITY  59. PCT                      ABS. HUMIDITY 11.7 GM/KG              NOX HUMIDITY CORRECTION FACTOR  1.03
BAG RESULTS
   TEST CYCLE                                       C-ID

   BLOWER DIF P MM. H2O(IN. H2O)                 914.4 (36.0)
   BLOWER INLET P MM. H2O(IN. H2O)               889.0 (35.0)
   BLOWER INLET TEMP. DEG. C(DEG. F)              37.8 (100.0)
   BLOWER REVOLUTIONS                                2966.
   TOT FLOW STD. CU. METRES(SCF)                  70.3 ( 2483.)
   THC SAMPLE METER/RANGE/PPM                    29.5/11/  30.
   THC BCKGRD METER/RANGE/PPM                     7.0/ 1/   7.
   CO  SAMPLE METER/RANGE/PPM                    29.2/13/  27.
   CO  BCKGRD METER/RANGE/PPM                     2.8/13/   3.
   CO2 SAMPLE METER/RANGE/PCT                    25.4/ 3/  .41
   CO2 BCKGRD METER/RANGE/PCT                     3.0/ 3/  .05
   NOX SAMPLE METER/RANGE/PPM                     8.5/ 2/   9.
   NOX BCKGRD METER/RANGE/PPM                     1.7/ 2/   2.
   DILUTION FACTOR                                    31.90
   THC CONCENTRATION PPM                               23.
   CO  CONCENTRATION PPM                               24.
   CO2 CONCENTRATION PCT                               .37
   NOX CONCENTRATION PPM                               6.9
   THC MASS GRAMS                                       .92
   CO  MASS GRAMS                                      1.94
   CO2 MASS GRAMS                                     476.5
   NOX MASS GRAMS                                       .95
   RUN TIME              SECONDS                      300.
        DFC, WET (DRY)                           .969 ( .950)
        SCF, WET (DRY)                          1.000 ( .977)
        VOL (SCM)                                      70.3
        SAM BLR (SCM)                                  0.00

   TEST NUMBER,                                    922
   BAROMETER,            MM HG                     741.9
   HUMIDITY,             G/KG                       11.7
   TEMPERATURE,          DEG C                      24.4
   CARBON DIOXIDE,        G/MIN                     95.3
   FUEL CONSUMPTION,      L/100 MIN                  3.59

   HYDROCARBONS, (THC)    G/MIN                      .18
   CARBON MONOXIDE,       G/MIN                      .39
   OXIDES OF NITROGEN,    G/MIN                      .19
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                                             H-IDLE- VEHICLE EMISSIONS RESULTS - OLDS DELTA BASELINE
                                                  PROJECT 05-6619-004

TEST NO.   922      RUN   1                     VEHICLE NO.92                         TEST WEIGHT  1928. KG( 4250. LBS)
VEHICLE MODEL   81 OLDS DELTA 88                DATE    6/30/82                       ACTUAL ROAD LOAD   8.4 KW( 11.3 HP)
ENGINE 5.7 L(350. CID) V-8                      BAG CART NO.  1                       DIESEL    EM-329-F
TRANSMISSION A3                                 DYNO NO.      2                       ODOMETER 59320. KM(36860. MILES)
                                                CVS NO.  17

BAROMETER 741.93 MM HG(29.21 IN HG)             DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)
RELATIVE HUMIDITY  59. PCT                      ABS. HUMIDITY 11.7 GM/KG              NOX HUMIDITY CORRECTION FACTOR  1.03
BAG RESULTS
   TEST CYCLE                                       H-ID

   BLOWER DIF P MM. H2O(IN. H2O)                 914.4 (36.0)
   BLOWER INLET P MM. H2O(IN. H2O)               889.0 (35.0)
   BLOWER INLET TEMP. DEG. C(DEG. F)              40.6 (105.0)
   BLOWER REVOLUTIONS                                2964.
   TOT FLOW STD. CU. METRES(SCF)                  69.7 ( 2460.)
   THC SAMPLE METER/RANGE/PPM                    27.3/11/  27.
   THC BCKGRD METER/RANGE/PPM                     7.0/ 1/   7.
   CO  SAMPLE METER/RANGE/PPM                    27.6/13/  25.
   CO  BCKGRD METER/RANGE/PPM                     2.1/13/   2.
   CO2 SAMPLE METER/RANGE/PCT                    22.4/ 3/  .36
   CO2 BCKGRD METER/RANGE/PCT                     2.7/ 3/  .04
   NOX SAMPLE METER/RANGE/PPM                     7.3/ 2/   7.
   NOX BCKGRD METER/RANGE/PPM                      .9/ 2/   1.
   DILUTION FACTOR                                    36.43
   THC CONCENTRATION PPM                               21.
   CO  CONCENTRATION PPM                               23.
   CO2 CONCENTRATION PCT                               .32
   NOX CONCENTRATION PPM                               6.4
   THC MASS GRAMS                                       .82
   CO  MASS GRAMS                                      1.85
   CO2 MASS GRAMS                                     411.4
   NOX MASS GRAMS                                       .88
   RUN TIME              SECONDS                      300.
        DFC, WET (DRY)                           .973 ( .954)
        SCF, WET (DRY)                          1.000 ( .978)
        VOL (SCM)                                      69.7
        SAM BLR (SCM)                                  0.00

   TEST NUMBER,                                    922
   BAROMETER,            MM HG                     741.9
   HUMIDITY,             G/KG                       11.7
   TEMPERATURE,          DEG C                      24.4
   CARBON DIOXIDE,        G/MIN                     82.3
   FUEL CONSUMPTION,      L/100 MIN                  3.10

   HYDROCARBONS, (THC)    G/MIN                      .16
   CARBON MONOXIDE,       G/MIN                      .37
   OXIDES OF NITROGEN,    G/MIN                      .18
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TABLE D-6 (Cont'd). TEST NO. 922 EMISSION RESULTS

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                                          C-NYCC- VEHICLE EMISSIONS RESULTS - OLDS DELTA BASELINE
                                                   PROJECT 05-6619-004

TEST NO.   922       RUN   1
VEHICLE MODEL   81 OLDS DELTA 88                  VEHICLE NO.92                              TEST WEIGHT  1928. KG( 4250. LBS)
ENGINE 5.7 L(350. CID) V-8                        DATE    6/30/82                            ACTUAL ROAD LOAD   8.4 KW( 11.3 HP)
TRANSMISSION A3                                   BAG CART NO.  1                            DIESEL    EM-329-F
                                                  DYNO NO.      2                            ODOMETER 59330. KM(36866. MILES)
                                                  CVS NO.  17

BAROMETER 742.44 MM HG(29.23 IN HG)               DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)
RELATIVE HUMIDITY  58. PCT                        ABS. HUMIDITY 10.7 GM/KG
BAG RESULTS                                                                                  NOX HUMIDITY CORRECTION FACTOR  1.00
   TEST CYCLE                                        C-NY

   BLOWER DIF P MM. H2O(IN. H2O)                  914.4 (36.0)
   BLOWER INLET P MM. H2O(IN. H2O)                889.0 (35.0)
   BLOWER INLET TEMP. DEG. C(DEG. F)               43.3 (110.0)
   BLOWER REVOLUTIONS                                 7095.
   TOT FLOW STD. CU. METRES(SCF)                  165.3 ( 5837.)
   THC SAMPLE METER/RANGE/PPM                     37.2/11/  37.
   THC BCKGRD METER/RANGE/PPM                      6.5/ 1/   7.
   CO  SAMPLE METER/RANGE/PPM                     34.7/13/  32.
   CO  BCKGRD METER/RANGE/PPM                      1.6/13/   1.
   CO2 SAMPLE METER/RANGE/PCT                     27.0/ 3/  .44
   CO2 BCKGRD METER/RANGE/PCT                      3.1/ 3/  .05
   NOX SAMPLE METER/RANGE/PPM                      7.7/ 2/   8.
   NOX BCKGRD METER/RANGE/PPM                      1.1/ 2/   1.
   DILUTION FACTOR                                    29.82
   THC CONCENTRATION PPM                               31.
   CO  CONCENTRATION PPM                               30.
   CO2 CONCENTRATION PCT                               .40
   NOX CONCENTRATION PPM                               6.6
   THC MASS GRAMS                                      2.95
   CO  MASS GRAMS                                      5.74
   CO2 MASS GRAMS                                    1200.7
   NOX MASS GRAMS                                      2.10
   RUN TIME              SECONDS                      725.
        DFC, WET (DRY)                            .966 ( .948)
        SCF, WET (DRY)                           1.000 ( .977)
        VOL (SCM)                                    165.3
        SAM BLR (SCM)                                 0.00
        KM  (MEASURED)                                 .79

   TEST NUMBER,                                   922
   BAROMETER,              MM HG                   742.4
   HUMIDITY,               G/KG                     10.7
   TEMPERATURE,            DEG C                    23.3
   CARBON DIOXIDE,          G/KM                  1521.3            G/MIN          99.4
   FUEL CONSUMPTION,        L/100KM                 57.45           L/100 MIN       3.76

   HYDROCARBONS, (THC)     G/KM                     3.74            G/MIN           0.24
   CARBON MONOXIDE,        G/KM                     7.27            G/MIN           0.48
   OXIDES OF NITROGEN,     G/KM                     2.66            G/MIN           0.17
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                                          H-NYCC- VEHICLE EMISSIONS RESULTS - OLDS DELTA BASELINE
                                                   PROJECT 05-6619-004

TEST NO.   922       RUN   1
VEHICLE MODEL   81 OLDS DELTA 88                  VEHICLE NO.92                              TEST WEIGHT  1928. KG( 4250. LBS)
ENGINE 5.7 L(350. CID) V-8                        DATE    6/30/82                            ACTUAL ROAD LOAD   8.4 KW( 11.3 HP)
TRANSMISSION A3                                   BAG CART NO.  1                            DIESEL    EM-329-F
                                                  DYNO NO.      2                            ODOMETER 59327. KM(36864. MILES)
                                                  CVS NO.  17

BAROMETER 741.93 MM HG(29.21 IN HG)               DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)
RELATIVE HUMIDITY  59. PCT                        ABS. HUMIDITY 11.7 GM/KG
BAG RESULTS                                                                                  NOX HUMIDITY CORRECTION FACTOR  1.03
   TEST CYCLE                                        H-NY

   BLOWER DIF P MM. H2O(IN. H2O)                  914.4 (36.0)
   BLOWER INLET P MM. H2O(IN. H2O)                889.0 (35.0)
   BLOWER INLET TEMP. DEG. C(DEG. F)               40.0 (104.0)
   BLOWER REVOLUTIONS                                 7092.
   TOT FLOW STD. CU. METRES(SCF)                  167.0 ( 5897.)
   THC SAMPLE METER/RANGE/PPM                     25.7/11/  26.
   THC BCKGRD METER/RANGE/PPM                      8.0/ 1/   8.
   CO  SAMPLE METER/RANGE/PPM                     26.6/13/  24.
   CO  BCKGRD METER/RANGE/PPM                      1.6/13/   1.
   CO2 SAMPLE METER/RANGE/PCT                     25.7/ 3/  .42
   CO2 BCKGRD METER/RANGE/PCT                      2.9/ 3/  .04
   NOX SAMPLE METER/RANGE/PPM                      7.6/ 2/   8.
   NOX BCKGRD METER/RANGE/PPM                       .6/ 2/   1.
   DILUTION FACTOR                                    31.55
   THC CONCENTRATION PPM                               18.
   CO  CONCENTRATION PPM                               22.
   CO2 CONCENTRATION PCT                               .38
   NOX CONCENTRATION PPM                               7.0
   THC MASS GRAMS                                      1.73
   CO  MASS GRAMS                                      4.34
   CO2 MASS GRAMS                                    1152.2
   NOX MASS GRAMS                                      2.31
   RUN TIME              SECONDS                      717.
        DFC, WET (DRY)                            .968 ( .950)
        SCF, WET (DRY)                           1.000 ( .977)
        VOL (SCM)                                    167.0
        SAM BLR (SCM)                                 0.00
        KM  (MEASURED)                                 .80

   TEST NUMBER,                                   922
   BAROMETER,              MM HG                   741.9
   HUMIDITY,               G/KG                     11.7
   TEMPERATURE,            DEG C                    24.4
   CARBON DIOXIDE,          G/KM                  1436.1            G/MIN          96.4
   FUEL CONSUMPTION,        L/100KM                 53.99           L/100 MIN       3.61

   HYDROCARBONS, (THC)     G/KM                     2.15            G/MIN           0.14
   CARBON MONOXIDE,        G/KM                     5.41            G/MIN           0.36
   OXIDES OF NITROGEN,     G/KM                     2.88            G/MIN           0.19
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TABLE D-7. TEST NO. 931 EMISSION RESULTS

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                                                C-IDLE- VEHICLE EMISSIONS RESULTS - ZEPHYR BASELINE
                                                           PROJECT 05-6619-004

TEST NO.   931      RUN  1                       VEHICLE NO.93                     TEST WEIGHT  1588. KG( 3500. LBS)
VEHICLE MODEL   82 MERCURY ZEPHYR                DATE     6/24/82                  ACTUAL ROAD LOAD   8.0 KW( 10.7 HP)
ENGINE 3.3 L(200. CID) L-6                       BAG CART NO.  1                   GASOLINE  EM-518-F
TRANSMISSION A3                                  DYNO NO.       3                  ODOMETER 11508. KM( 7151. MILES)
                                                 CVS NO.   2

BAROMETER 741.93 MM HG(29.21 IN HG)              DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)
RELATIVE HUMIDITY  74. PCT                       ABS. HUMIDITY 13.6 GM/KG          NOX HUMIDITY CORRECTION FACTOR  1.11
BAG RESULTS
   TEST CYCLE                                       C-ID

   BLOWER DIF P MM. H2O(IN. H2O)                 782.3 (30.8)
   BLOWER INLET P MM. H2O(IN. H2O)               784.9 (30.9)
   BLOWER INLET TEMP. DEG. C(DEG. F)              43.3 (110.0)
   BLOWER REVOLUTIONS                               24258.
   TOT FLOW STD. CU. METRES(SCF)                  45.1 ( 1592.)
   THC SAMPLE METER/RANGE/PPM                    11.9/ 3/ 119.
   THC BCKGRD METER/RANGE/PPM                     1.3/ 3/  13.
   CO  SAMPLE METER/RANGE/PPM                    25.7/ 3/ 596.
   CO  BCKGRD METER/RANGE/PPM                      .2/ 3/   5.
   CO2 SAMPLE METER/RANGE/PCT                    71.0/ 3/ 1.28
   CO2 BCKGRD METER/RANGE/PCT                     3.1/ 3/  .05
   NOX SAMPLE METER/RANGE/PPM                    36.8/ 2/  37.
   NOX BCKGRD METER/RANGE/PPM                     1.1/ 2/   1.
   DILUTION FACTOR                                   9.90
   THC CONCENTRATION PPM                             107.
   CO  CONCENTRATION PPM                             563.
   CO2 CONCENTRATION PCT                             1.24
   NOX CONCENTRATION PPM                             35.8
   THC MASS GRAMS                                    2.79
   CO  MASS GRAMS                                   29.57
   CO2 MASS GRAMS                                  1025.4
   NOX MASS GRAMS                                    3.42
   RUN TIME                  SECONDS                 302.
        DFC, WET (DRY)                           .899 ( .878)
        SCF, WET (DRY)                          1.000 ( .964)
        VOL (SCM)                                    45.1
        SAM BLR (SCM)                                0.00


   TEST NUMBER,                                   931
   BAROMETER,               MM HG                 741.9
   HUMIDITY,                G/KG                   13.6
   TEMPERATURE,             DEG C                  23.3
   CARBON DIOXIDE,           G/min                203.7
   FUEL CONSUMPTION,        L/100 min               9.17

   HYDROCARBONS, (THC)   G/min                      0.55
   CARBON MONOXIDE,      G/min                      5.87
   OXIDES OF NITROGEN,   G/min                      0.68

                                                H-IDLE- VEHICLE EMISSIONS RESULTS - ZEPHYR BASELINE
                                                           PROJECT 05-6619-004

TEST NO.   931      RUN                          VEHICLE NO.93                     TEST WEIGHT  1588. KG( 3500. LBS)
VEHICLE MODEL   82 MERCURY ZEPHYR                DATE     6/24/82                  ACTUAL ROAD LOAD   8.0 KW( 10.7 HP)
ENGINE 3.3 L(200. CID) L-6                       BAG CART NO.  1                   GASOLINE  EM-518-F
TRANSMISSION A3                                  DYNO NO.       3                  ODOMETER 11515. KM( 7155. MILES)
                                                 CVS NO.   2

BAROMETER 741.93 MM HG(29.21 IN HG)              DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)
RELATIVE HUMIDITY  74. PCT                       ABS. HUMIDITY 13.6 GM/KG          NOX HUMIDITY CORRECTION FACTOR  1.11
BAG RESULTS
   TEST CYCLE                                       H-ID

   BLOWER DIF P MM. H2O(IN. H2O)                 774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)               774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)              42.8 (109.0)
   BLOWER REVOLUTIONS                               24034.
   TOT FLOW STD. CU. METRES(SCF)                  44.8 ( 1581.)
   THC SAMPLE METER/RANGE/PPM                    10.2/ 3/ 102.
   THC BCKGRD METER/RANGE/PPM                     1.4/ 3/  14.
   CO  SAMPLE METER/RANGE/PPM                    81.2/11/ 371.
   CO  BCKGRD METER/RANGE/PPM                      .6/11/   2.
   CO2 SAMPLE METER/RANGE/PCT                    19.2/ 3/  .31
   CO2 BCKGRD METER/RANGE/PCT                     2.8/ 3/  .04
   NOX SAMPLE METER/RANGE/PPM                     4.9/ 2/   5.
   NOX BCKGRD METER/RANGE/PPM                      .9/ 2/   1.
   DILUTION FACTOR                                  37.82
   THC CONCENTRATION PPM                              88.
   CO  CONCENTRATION PPM                             359.
   CO2 CONCENTRATION PCT                              .27
   NOX CONCENTRATION PPM                              4.0
   THC MASS GRAMS                                    2.28
   CO  MASS GRAMS                                   18.69
   CO2 MASS GRAMS                                   218.4
   NOX MASS GRAMS                                     .38
   RUN TIME                  SECONDS                 300.
        DFC, WET (DRY)                           .974 ( .950)
        SCF, WET (DRY)                          1.000 ( .973)
        VOL (SCM)                                    44.8
        SAM BLR (SCM)                                0.00


   TEST NUMBER,                                   931
   BAROMETER,               MM HG                 741.9
   HUMIDITY,                G/KG                   13.6
   TEMPERATURE,             DEG C                  23.3
   CARBON DIOXIDE,           G/min                 43.7
   FUEL CONSUMPTION,        L/100 min              2.18

   HYDROCARBONS, (THC)   G/min                      .46
   CARBON MONOXIDE,      G/min                     3.74
   OXIDES OF NITROGEN,   G/min                      .08
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TABLE D-7 (Cont'd). TEST NO. 931 EMISSION RESULTS

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                                        C-NYCC- VEHICLE EMISSIONS RESULTS - ZEPHYR BASELINE
                                                PROJECT 05-6619-004

TEST NO.   931      RUN                          VEHICLE NO.93                    TEST WEIGHT  1588. KG( 3500. LBS)
VEHICLE MODEL   82 MERCURY ZEPHYR                DATE     6/24/82                 ACTUAL ROAD LOAD    8.0 KW( 10.7 HP)
ENGINE 3.3 L(200. CID) L-6                       BAG CART NO.  1                  GASOLINE  EM-518-F
TRANSMISSION A3                                  DYNO NO.       3                 ODOMETER 11526. KM( 7162. MILES)
                                                 CVS NO.   2

BAROMETER 739.65 MM HG(29.12 IN HG)              DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
RELATIVE HUMIDITY  55. PCT                       ABS. HUMIDITY 10.5 GM/KG         NOX HUMIDITY CORRECTION FACTOR   .99
BAG RESULTS
   TEST CYCLE                                       C-NY

   BLOWER DIF P MM. H2O(IN. H2O)                 782.3 (30.8)
   BLOWER INLET P MM. H2O(IN. H2O)               772.2 (30.4)
   BLOWER INLET TEMP. DEG. C(DEG. F)              42.2 (108.0)
   BLOWER REVOLUTIONS                               58747.
   TOT FLOW STD. CU. METRES(SCF)                 109.2 ( 3856.)
   THC SAMPLE METER/RANGE/PPM                    63.3/ 2/  63.
   THC BCKGRD METER/RANGE/PPM                    18.1/ 2/  18.
   CO  SAMPLE METER/RANGE/PPM                    78.2/12/ 184.
   CO  BCKGRD METER/RANGE/PPM                     7.4/12/  14.
   CO2 SAMPLE METER/RANGE/PCT                    32.4/ 3/  .54
   CO2 BCKGRD METER/RANGE/PCT                     2.7/ 3/  .04
   NOX SAMPLE METER/RANGE/PPM                    11.1/ 2/  11.
   NOX BCKGRD METER/RANGE/PPM                     1.2/ 2/   1.
   DILUTION FACTOR                                   23.81
   THC CONCENTRATION PPM                              46.
   CO  CONCENTRATION PPM                             165.
   CO2 CONCENTRATION PCT                              .50
   NOX CONCENTRATION PPM                             10.0
   THC MASS GRAMS                                     2.89
   CO  MASS GRAMS                                    21.00
   CO2 MASS GRAMS                                   997.8
   NOX MASS GRAMS                                     2.06
   RUN TIME               SECONDS                   733.
        DFC, WET (DRY)                           .958 ( .941)
        SCF, WET (DRY)                          1.000 ( .977)
        VOL (SCM)                                   109.2
        SAM BLR (SCM)                                0.00
        KM  (MEASURED)                                .82

   TEST NUMBER,                                    931
   BAROMETER,             MM HG                     739.6
   HUMIDITY,              G/KG                       10.5
   TEMPERATURE,           DEG C                      23.9
   CARBON DIOXIDE,         G/KM                    1222.6    G/min       81.7
   FUEL CONSUMPTION,       L/100KM                   54.39   L/100min    3.65

   HYDROCARBONS, (THC)    G/KM                        3.55   G/min       0.24
   CARBON MONOXIDE,       G/KM                       25.74   G/min       1.72
   OXIDES OF NITROGEN,    G/KM                        2.53   G/min       0.17

                                        H-NYCC- VEHICLE EMISSIONS RESULTS - ZEPHYR BASELINE
                                                PROJECT 05-6619-004

TEST NO.   931      RUN                          VEHICLE NO.93                    TEST WEIGHT  1588. KG( 3500. LBS)
VEHICLE MODEL   82 MERCURY ZEPHYR                DATE     6/24/82                 ACTUAL ROAD LOAD    8.0 KW( 10.7 HP)
ENGINE 3.3 L(200. CID) L-6                       BAG CART NO.  1                  GASOLINE  EM-518-F
TRANSMISSION A3                                  DYNO NO.       3                 ODOMETER 11516. KM( 7156. MILES)
                                                 CVS NO.   2

BAROMETER 741.93 MM HG(29.21 IN HG)              DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
RELATIVE HUMIDITY  66. PCT                       ABS. HUMIDITY 12.6 GM/KG         NOX HUMIDITY CORRECTION FACTOR  1.07
BAG RESULTS
   TEST CYCLE                                       H-NY

   BLOWER DIF P MM. H2O(IN. H2O)                 784.9 (30.9)
   BLOWER INLET P MM. H2O(IN. H2O)               774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)              42.2 (108.0)
   BLOWER REVOLUTIONS                               57773.
   TOT FLOW STD. CU. METRES(SCF)                 107.7 ( 3803.)
   THC SAMPLE METER/RANGE/PPM                    26.6/ 2/  27.
   THC BCKGRD METER/RANGE/PPM                    16.2/ 2/  16.
   CO  SAMPLE METER/RANGE/PPM                    23.8/13/  22.
   CO  BCKGRD METER/RANGE/PPM                     1.2/13/   1.
   CO2 SAMPLE METER/RANGE/PCT                    28.2/ 3/  .46
   CO2 BCKGRD METER/RANGE/PCT                     3.0/ 3/  .05
   NOX SAMPLE METER/RANGE/PPM                     9.1/ 2/   9.
   NOX BCKGRD METER/RANGE/PPM                      .9/ 2/   1.
   DILUTION FACTOR                                   28.60
   THC CONCENTRATION PPM                              11.
   CO  CONCENTRATION PPM                              20.
   CO2 CONCENTRATION PCT                              .42
   NOX CONCENTRATION PPM                              8.2
   THC MASS GRAMS                                      .68
   CO  MASS GRAMS                                     2.51
   CO2 MASS GRAMS                                   827.0
   NOX MASS GRAMS                                     1.81
   RUN TIME               SECONDS                   722.
        DFC, WET (DRY)                           .965 ( .944)
        SCF, WET (DRY)                          1.000 ( .974)
        VOL (SCM)                                   107.7
        SAM BLR (SCM)                                0.00
        KM  (MEASURED)                                .78

   TEST NUMBER,                                    931
   BAROMETER,             MM HG                     741.9
   HUMIDITY,              G/KG                       12.6
   TEMPERATURE,           DEG C                      23.9
   CARBON DIOXIDE,         G/KM                    1063.7    G/min        68.7
   FUEL CONSUMPTION,       L/100KM                   45.73   L/100min      2.96

   HYDROCARBONS, (THC)    G/KM                         .88   G/min         0.06
   CARBON MONOXIDE,       G/KM                        3.23   G/min         0.21
   OXIDES OF NITROGEN,    G/KM                        2.33   G/min         0.15
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TABLE D-8. TEST NO. 932 EMISSION RESULTS

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                                                C-IDLE- VEHICLE EMISSIONS RESULTS - ZEPHYR BASELINE
                                                        PROJECT 05-6619-004

TEST NO.   932      RUN 1                       VEHICLE NO.93                  TEST WEIGHT  1588. KG( 3500. LBS)
VEHICLE MODEL   82 MERCURY ZEPHYR               DATE     6/25/82               ACTUAL ROAD LOAD   8.0 KW( 10.7 HP)
ENGINE 3.3 L(200. CID) L-6                      BAG CART NO.  1                GASOLINE  EM-518-F
TRANSMISSION A3                                 DYNO NO.      3                ODOMETER      0. KM(    0. MILES)
                                                CVS NO.   2

BAROMETER 743.46 MM HG(29.27 IN HG)             DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
RELATIVE HUMIDITY  62. PCT                      ABS. HUMIDITY 11.9 GM/KG       NOX HUMIDITY CORRECTION FACTOR  1.04
BAG RESULTS
   TEST CYCLE                                     C-ID

   BLOWER DIF P MM. H2O(IN. H2O)                787.4 (31.0)
   BLOWER INLET P MM. H2O(IN. H2O)              774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)             44.4 (112.0)
   BLOWER REVOLUTIONS                              24080.
   TOT FLOW STD. CU. METRES(SCF)                 44.8 ( 1583.)
   THC SAMPLE METER/RANGE/PPM                   11.7/ 3/ 117.
   THC BCKGRD METER/RANGE/PPM                    1.2/ 3/  12.
   CO  SAMPLE METER/RANGE/PPM                   23.6/ 3/ 546.
   CO  BCKGRD METER/RANGE/PPM                     .1/ 3/   2.
   CO2 SAMPLE METER/RANGE/PCT                   50.7/ 3/  .88
   CO2 BCKGRD METER/RANGE/PCT                    2.3/ 3/  .04
   NOX SAMPLE METER/RANGE/PPM                   26.9/ 2/  27.
   NOX BCKGRD METER/RANGE/PPM                    1.0/ 2/   1.
   DILUTION FACTOR                                  14.18
   THC CONCENTRATION PPM                           106.
   CO  CONCENTRATION PPM                           523.
   CO2 CONCENTRATION PCT                             .85
   NOX CONCENTRATION PPM                            26.0
   THC MASS GRAMS                                    2.74
   CO  MASS GRAMS                                   27.31
   CO2 MASS GRAMS                                  695.9
   NOX MASS GRAMS                                    2.31
   RUN TIME                 SECONDS                300.
        DFC, WET (DRY)                          .929 ( .911)
        SCF, WET (DRY)                         1.000 ( .972)
        VOL (SCM)                                   44.8
        SAM BLR (SCM)                               0.00


   TEST NUMBER,                                 932
   BAROMETER,             MM HG                  743.5
   HUMIDITY,              G/KG                    11.9
   TEMPERATURE,           DEG C                   23.9
   CARBON DIOXIDE,         G/min                 139.2
   FUEL CONSUMPTION,       L/100min                6.38

   HYDROCARBONS, (THC)     G/min                    .55
   CARBON MONOXIDE,        G/min                   5.46
   OXIDES OF NITROGEN,     G/min                    .46
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                                                H-IDLE- VEHICLE EMISSIONS RESULTS - ZEPHYR BASELINE
                                                        PROJECT 05-6619-004

TEST NO.   932      RUN 1                       VEHICLE NO.93                  TEST WEIGHT  1588. KG( 3500. LBS)
VEHICLE MODEL   82 MERCURY ZEPHYR               DATE     6/25/82               ACTUAL ROAD LOAD   8.0 KW( 10.7 HP)
ENGINE 3.3 L(200. CID) L-6                      BAG CART NO.  1                GASOLINE  EM-518-F
TRANSMISSION A3                                 DYNO NO.      3                ODOMETER      0. KM(    0. MILES)
                                                CVS NO.   2

BAROMETER 743.46 MM HG(29.27 IN HG)             DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)
RELATIVE HUMIDITY  58. PCT                      ABS. HUMIDITY 10.7 GM/KG       NOX HUMIDITY CORRECTION FACTOR  1.00
BAG RESULTS
   TEST CYCLE                                     H-ID

   BLOWER DIF P MM. H2O(IN. H2O)                787.4 (31.0)
   BLOWER INLET P MM. H2O(IN. H2O)              774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)             43.3 (110.0)
   BLOWER REVOLUTIONS                              24066.
   TOT FLOW STD. CU. METRES(SCF)                 44.9 ( 1585.)
   THC SAMPLE METER/RANGE/PPM                   10.3/ 3/ 103.
   THC BCKGRD METER/RANGE/PPM                    1.4/ 3/  14.
   CO  SAMPLE METER/RANGE/PPM                   75.3/11/ 329.
   CO  BCKGRD METER/RANGE/PPM                     .5/11/   1.
   CO2 SAMPLE METER/RANGE/PCT                   19.1/ 3/  .31
   CO2 BCKGRD METER/RANGE/PCT                    2.3/ 3/  .04
   NOX SAMPLE METER/RANGE/PPM                    5.4/ 2/   5.
   NOX BCKGRD METER/RANGE/PPM                    1.1/ 2/   1.
   DILUTION FACTOR                                  38.42
   THC CONCENTRATION PPM                            89.
   CO  CONCENTRATION PPM                           320.
   CO2 CONCENTRATION PCT                             .27
   NOX CONCENTRATION PPM                             4.3
   THC MASS GRAMS                                    2.31
   CO  MASS GRAMS                                   16.71
   CO2 MASS GRAMS                                  223.6
   NOX MASS GRAMS                                     .37
   RUN TIME                 SECONDS                300.
        DFC, WET (DRY)                          .974 ( .956)
        SCF, WET (DRY)                         1.000 ( .978)
        VOL (SCM)                                   44.9
        SAM BLR (SCM)                               0.00


   TEST NUMBER,                                 932
   BAROMETER,             MM HG                  743.5
   HUMIDITY,              G/KG                    10.7
   TEMPERATURE,           DEG C                   23.3
   CARBON DIOXIDE,         G/min                  44.7
   FUEL CONSUMPTION,       L/100min                2.20

   HYDROCARBONS, (THC)     G/min                    .46
   CARBON MONOXIDE,        G/min                   3.34
   OXIDES OF NITROGEN,     G/min                    .07
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TABLE D-8 (Cont'd). TEST NO. 932 EMISSION RESULTS

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                                         C-NYCC- VEHICLE EMISSIONS RESULTS -  ZEPHYR BASELINE
                                                 PROJECT 05-6619-004

TEST NO.   932      RUN  1                       VEHICLE NO.93                         TEST WEIGHT  1588. KG( 3500. LBS)
VEHICLE MODEL   82 MERCURY ZEPHYR                DATE    6/25/82                       ACTUAL ROAD LOAD   8.0 KW( 10.7 HP)
ENGINE 3.3 L(200. CID) L-6                       BAG CART NO.  1                       GASOLINE  EM-518-F
TRANSMISSION A3                                  DYNO NO.      3                       ODOMETER 11545. KM( 7174. MILES)
                                                 CVS NO.   2

BAROMETER 738.63 MM HG(29.08 IN HG)              DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
RELATIVE HUMIDITY  51. PCT                       ABS. HUMIDITY  9.8 GM/KG              NOX HUMIDITY CORRECTION FACTOR   .97
BAG RESULTS
  TEST CYCLE                                       C-NY

  BLOWER DIF P MM. H2O(IN. H2O)                  787.4 (31.0)
  BLOWER INLET P MM. H2O(IN. H2O)                782.3 (30.8)
  BLOWER INLET TEMP. DEG. C(DEG. F)               38.9 (102.0)
  BLOWER REVOLUTIONS                                57454.
  TOT FLOW STD. CU. METRES(SCF)                  107.2 ( 3784.)
  THC SAMPLE METER/RANGE/PPM                     57.1/ 2/  57.
  THC BCKGRD METER/RANGE/PPM                     11.7/ 2/  12.
  CO  SAMPLE METER/RANGE/PPM                     64.1/11/ 259.
  CO  BCKGRD METER/RANGE/PPM                      1.3/11/   4.
  CO2 SAMPLE METER/RANGE/PCT                     34.0/ 3/  .57
  CO2 BCKGRD METER/RANGE/PCT                      3.3/ 3/  .05
  NOX SAMPLE METER/RANGE/PPM                     10.5/ 2/  11.
  NOX BCKGRD METER/RANGE/PPM                      1.1/ 2/   1.
  DILUTION FACTOR                                   22.39
  THC CONCENTRATION PPM                             46.
  CO  CONCENTRATION PPM                             249.
  CO2 CONCENTRATION PCT                              .52
  NOX CONCENTRATION PPM                             9.4
  THC MASS GRAMS                                    2.84
  CO  MASS GRAMS                                    31.02
  CO2 MASS GRAMS                                    1018.8
  NOX MASS GRAMS                                    1.88
  RUN TIME               SECONDS                    718.
       DFC, WET (DRY)                             .955 ( .939)
       SCF, WET (DRY)                            1.000 ( .978)
       VOL (SCM)                                    107.2
       SAM BLR (SCM)                                0.00
       KM  (MEASURED)                               .80

  TEST NUMBER,                                   932
  BAROMETER,            MM HG                     738.6
  HUMIDITY,             G/KG                        9.8
  TEMPERATURE,          DEG C                      23.9
  CARBON DIOXIDE,        G/KM                    1268.7   G/min         85.1
  FUEL CONSUMPTION,      L/100KM                  57.22   L/100min       3.83

  HYDROCARBONS, (THC)    G/KM                      3.53   G/min          0.24
  CARBON MONOXIDE,       G/KM                     38.62   G/min          2.59
  OXIDES OF NITROGEN,    G/KM                      2.34   G/min          0.16
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                                         H-NYCC- VEHICLE EMISSIONS RESULTS -  ZEPHYR BASELINE
                                                 PROJECT 05-6619-004

TEST NO.   932      RUN  1                       VEHICLE NO.93                         TEST WEIGHT  1588. KG( 3500. LBS)
VEHICLE MODEL   82 MERCURY ZEPHYR                DATE    6/25/82                       ACTUAL ROAD LOAD   8.0 KW( 10.7 HP)
ENGINE 3.3 L(200. CID) L-6                       BAG CART NO.  1                       GASOLINE  EM-518-F
TRANSMISSION A3                                  DYNO NO.      3                       ODOMETER 12814. KM( 7962. MILES)
                                                 CVS NO.   2

BAROMETER 743.46 MM HG(29.27 IN HG)              DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)
RELATIVE HUMIDITY  59. PCT                       ABS. HUMIDITY 11.6 GM/KG              NOX HUMIDITY CORRECTION FACTOR  1.03
BAG RESULTS
  TEST CYCLE                                       H-NY

  BLOWER DIF P MM. H2O(IN. H2O)                  787.4 (31.0)
  BLOWER INLET P MM. H2O(IN. H2O)                787.4 (31.0)
  BLOWER INLET TEMP. DEG. C(DEG. F)               42.8 (109.0)
  BLOWER REVOLUTIONS                                57744.
  TOT FLOW STD. CU. METRES(SCF)                  107.6 ( 3801.)
  THC SAMPLE METER/RANGE/PPM                     27.9/ 2/  28.
  THC BCKGRD METER/RANGE/PPM                     19.5/ 2/  20.
  CO  SAMPLE METER/RANGE/PPM                     32.0/13/  29.
  CO  BCKGRD METER/RANGE/PPM                      1.3/13/   1.
  CO2 SAMPLE METER/RANGE/PCT                     27.6/ 3/  .45
  CO2 BCKGRD METER/RANGE/PCT                      2.5/ 3/  .04
  NOX SAMPLE METER/RANGE/PPM                      9.3/ 2/   9.
  NOX BCKGRD METER/RANGE/PPM                      1.1/ 2/   1.
  DILUTION FACTOR                                   29.21
  THC CONCENTRATION PPM                             9.
  CO  CONCENTRATION PPM                             28.
  CO2 CONCENTRATION PCT                              .42
  NOX CONCENTRATION PPM                             8.2
  THC MASS GRAMS                                     .56
  CO  MASS GRAMS                                    3.45
  CO2 MASS GRAMS                                    820.3
  NOX MASS GRAMS                                    1.75
  RUN TIME               SECONDS                    721.
       DFC, WET (DRY)                             .966 ( .947)
       SCF, WET (DRY)                            1.000 ( .977)
       VOL (SCM)                                    107.6
       SAM BLR (SCM)                                0.00
       KM  (MEASURED)                               .80

  TEST NUMBER,                                   932
  BAROMETER,            MM HG                     743.5
  HUMIDITY,             G/KG                       11.6
  TEMPERATURE,          DEG C                      24.4
  CARBON DIOXIDE,        G/KM                    1023.2   G/min         68.3
  FUEL CONSUMPTION,      L/100KM                  44.06   L/100min       2.93

  HYDROCARBONS, (THC)    G/KM                       .70   G/min          0.05
  CARBON MONOXIDE,       G/KM                      4.31   G/min          0.29
  OXIDES OF NITROGEN,    G/KM                      2.18   G/min          0.15
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TABLE D-9. TEST NO. 936 EMISSION RESULTS

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                                               C-IDLE- VEHICLE EMISSIONS RESULTS - ZEPHYR MALFUNCTION
                                                         PROJECT 05-6619-004

TEST NO.   936      RUN   1                          VEHICLE NO.93                      TEST WEIGHT  1588. KG( 3500. LBS)
VEHICLE MODEL   82 MERCURY ZEPHYR                    DATE    6/29/82                    ACTUAL ROAD LOAD   8.0 KW( 10.7 HP)
ENGINE 3.3 L(200. CID) L-6                           BAG CART NO.  1                    GASOLINE  EM-518-F
TRANSMISSION A3                                      DYNO NO.      3                    ODOMETER 11560. KM( 7183. MILES)
                                                     CVS NO.   2

BAROMETER 739.90 MM HG(29.13 IN HG)                  DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)
RELATIVE HUMIDITY  62. PCT                           ABS. HUMIDITY 11.4 GM/KG           NOX HUMIDITY CORRECTION FACTOR  1.02
BAG RESULTS
   TEST CYCLE                                          C-ID

   BLOWER DIF P MM. H2O(IN. H2O)                     762.0 (30.0)
   BLOWER INLET P MM. H2O(IN. H2O)                   762.0 (30.0)
   BLOWER INLET TEMP. DEG. C(DEG. F)                  41.1 (106.0)
   BLOWER REVOLUTIONS                                  24022.
   TOT FLOW STD. CU. METRES(SCF)                      44.8 ( 1583.)
   THC  SAMPLE METER/RANGE/PPM                       35.0/ 3/ 350.
   THC  BCKGRD METER/RANGE/PPM                        1.8/ 3/  18.
   CO   SAMPLE METER/RANGE/PPM                       66.1/ 2/3422.
   CO   BCKGRD METER/RANGE/PPM                         .1/ 2/   4.
   CO2  SAMPLE METER/RANGE/PCT                       63.2/ 3/ 1.13
   CO2  BCKGRD METER/RANGE/PCT                        2.7/ 3/  .04
   NOX  SAMPLE METER/RANGE/PPM                       53.4/ 2/  53.
   NOX  BCKGRD METER/RANGE/PPM                         .8/ 2/   1.
   DILUTION FACTOR                                       9.00
   THC CONCENTRATION PPM                                334.
   CO  CONCENTRATION PPM                               3276.
   CO2 CONCENTRATION PCT                                1.09
   NOX CONCENTRATION PPM                                52.7
   THC MASS GRAMS                                        8.64
   CO  MASS GRAMS                                      171.01
   CO2 MASS GRAMS                                      894.9
   NOX MASS GRAMS                                        4.63
   RUN TIME                 SECONDS                    300.
        DFC, WET (DRY)                               .889 ( .871)
        SCF, WET (DRY)                              1.000 ( .970)
        VOL (SCM)                                       44.8
        SAM BLR (SCM)                                   0.00


   TEST NUMBER,                                        936
   BAROMETER,              MM HG                       739.9
   HUMIDITY,               G/KG                         11.4
   TEMPERATURE,            DEG C                        23.3
   CARBON DIOXIDE,          G/min                      179.0
   FUEL CONSUMPTION,        L/100min                    10.17

   HYDROCARBONS, (THC)     G/min                         1.73
   CARBON MONOXIDE,        G/min                        34.21
   OXIDES OF NITROGEN,     G/min                          .93
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                                               H-IDLE- VEHICLE EMISSIONS RESULTS - ZEPHYR MALFUNCTION
                                                         PROJECT 05-6619-004

TEST NO.   936      RUN   1                          VEHICLE NO.93                      TEST WEIGHT  1588. KG( 3500. LBS)
VEHICLE MODEL   82 MERCURY ZEPHYR                    DATE    6/29/82                    ACTUAL ROAD LOAD   8.0 KW( 10.7 HP)
ENGINE 3.3 L(200. CID) L-6                           BAG CART NO.  1                    GASOLINE  EM-518-F
TRANSMISSION A3                                      DYNO NO.      3                    ODOMETER 11563. KM( 7185. MILES)
                                                     CVS NO.   2

BAROMETER 739.90 MM HG(29.13 IN HG)                  DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)
RELATIVE HUMIDITY  62. PCT                           ABS. HUMIDITY 11.4 GM/KG           NOX HUMIDITY CORRECTION FACTOR  1.02
BAG RESULTS
   TEST CYCLE                                          H-ID

   BLOWER DIF P MM. H2O(IN. H2O)                     762.0 (30.0)
   BLOWER INLET P MM. H2O(IN. H2O)                   762.0 (30.0)
   BLOWER INLET TEMP. DEG. C(DEG. F)                  41.1 (106.0)
   BLOWER REVOLUTIONS                                  24031.
   TOT FLOW STD. CU. METRES(SCF)                      44.9 ( 1584.)
   THC  SAMPLE METER/RANGE/PPM                       11.1/ 3/ 111.
   THC  BCKGRD METER/RANGE/PPM                        1.5/ 3/  15.
   CO   SAMPLE METER/RANGE/PPM                       90.1/11/ 442.
   CO   BCKGRD METER/RANGE/PPM                         .7/11/   2.
   CO2  SAMPLE METER/RANGE/PCT                       19.6/ 3/  .31
   CO2  BCKGRD METER/RANGE/PCT                        2.7/ 3/  .04
   NOX  SAMPLE METER/RANGE/PPM                        5.5/ 2/   6.
   NOX  BCKGRD METER/RANGE/PPM                         .7/ 2/   1.
   DILUTION FACTOR                                      36.31
   THC CONCENTRATION PPM                                 96.
   CO  CONCENTRATION PPM                                429.
   CO2 CONCENTRATION PCT                                 .27
   NOX CONCENTRATION PPM                                 4.8
   THC MASS GRAMS                                        2.49
   CO  MASS GRAMS                                       22.40
   CO2 MASS GRAMS                                      225.6
   NOX MASS GRAMS                                         .42
   RUN TIME                 SECONDS                    300.
        DFC, WET (DRY)                               .972 ( .953)
        SCF, WET (DRY)                              1.000 ( .977)
        VOL (SCM)                                       44.9
        SAM BLR (SCM)                                   0.00


   TEST NUMBER,                                        936
   BAROMETER,              MM HG                       739.9
   HUMIDITY,               G/KG                         11.4
   TEMPERATURE,            DEG C                        23.3
   CARBON DIOXIDE,          G/min                       45.1
   FUEL CONSUMPTION,        L/100min                     2.29

   HYDROCARBONS, (THC)     G/min                          .50
   CARBON MONOXIDE,        G/min                         4.48
   OXIDES OF NITROGEN,     G/min                          .08
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TABLE D-9 (Cont'd). TEST NO. 936 EMISSION RESULTS

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                                                C-NYCC- VEHICLE EMISSIONS RESULTS - ZEPHYR MALFUNCTION
                                                     PROJECT 05-6619-004

TEST NO.   936      RUN   1                         VEHICLE NO.93                     TEST WEIGHT  1588. KG( 3500. LBS)
VEHICLE MODEL   82 MERCURY ZEPHYR                   DATE    6/29/82                   ACTUAL ROAD LOAD   8.0 KW( 10.7 HP)
ENGINE 3.3 L(200. CID) L-6                          BAG CART NO.  1                   GASOLINE  EM-518-F
TRANSMISSION A3                                     DYNO NO.      3                   ODOMETER 11578. KM( 7194. MILES)
                                                    CVS NO.   2

BAROMETER 738.38 MM HG(29.07 IN HG)                 DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)
RELATIVE HUMIDITY  59. PCT                          ABS. HUMIDITY 11.7 GM/KG          NOX HUMIDITY CORRECTION FACTOR  1.03
BAG RESULTS
   TEST CYCLE                                          C-NY

   BLOWER DIF P MM. H2O(IN. H2O)                    774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)                  774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)                 41.7 (107.0)
   BLOWER REVOLUTIONS                                  57520.
   TOT FLOW STD. CU. METRES(SCF)                    106.8 ( 3772.)
   THC SAMPLE METER/RANGE/PPM                       19.6/ 3/ 196.
   THC BCKGRD METER/RANGE/PPM                        2.0/ 3/  20.
   CO  SAMPLE METER/RANGE/PPM                       53.8/ 3/1330.
   CO  BCKGRD METER/RANGE/PPM                         .1/ 3/   2.
   CO2 SAMPLE METER/RANGE/PCT                       26.8/ 3/  .44
   CO2 BCKGRD METER/RANGE/PCT                        3.0/ 3/  .05
   NOX SAMPLE METER/RANGE/PPM                       12.8/ 2/  13.
   NOX BCKGRD METER/RANGE/PPM                        1.1/ 2/   1.
   DILUTION FACTOR                                      22.79
   THC CONCENTRATION PPM                                177.
   CO  CONCENTRATION PPM                               1291.
   CO2 CONCENTRATION PCT                                 .40
   NOX CONCENTRATION PPM                                11.7
   THC MASS GRAMS                                       10.89
   CO  MASS GRAMS                                      160.55
   CO2 MASS GRAMS                                      772.8
   NOX MASS GRAMS                                        2.48
   RUN TIME                SECONDS                     718.
        DFC, WET (DRY)                               .956 ( .938)
        SCF, WET (DRY)                              1.000 ( .977)
        VOL (SCM)                                      106.8
        SAM BLR (SCM)                                    0.00
        KM  (MEASURED)                                   .79

   TEST NUMBER,                                     936
   BAROMETER,              MM HG                     738.4
   HUMIDITY,               G/KG                       11.7
   TEMPERATURE,            DEG C                      24.4
   CARBON DIOXIDE,          G/KM                     975.7   G/min       64.6
   FUEL CONSUMPTION,        L/100KM                   57.11  L/100min     3.77

   HYDROCARBONS, (THC)     G/KM                       13.76  G/min        0.91
   CARBON MONOXIDE,        G/KM                      203.23  G/min       13.42
   OXIDES OF NITROGEN,     G/KM                        3.13  G/min        0.21

                                                H-NYCC- VEHICLE EMISSIONS RESULTS - ZEPHYR MALFUNCTION
                                                     PROJECT 05-6619-004

TEST NO.   936      RUN   1                         VEHICLE NO.93                     TEST WEIGHT  1588. KG( 3500. LBS)
VEHICLE MODEL   82 MERCURY ZEPHYR                   DATE    6/29/82                   ACTUAL ROAD LOAD   8.0 KW( 10.7 HP)
ENGINE 3.3 L(200. CID) L-6                          BAG CART NO.  1                   GASOLINE  EM-518-F
TRANSMISSION A3                                     DYNO NO.      3                   ODOMETER 11571. KM( 7190. MILES)
                                                    CVS NO.   2

BAROMETER 739.90 MM HG(29.13 IN hG)                 DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)
RELATIVE HUMIDITY  62. PCT                          ABS. HUMIDITY 11.4 GM/KG          NOX HUMIDITY CORRECTION FACTOR  1.02
BAG RESULTS
   TEST CYCLE                                          H-NY

   BLOWER DIF P MM. H2O(IN. H2O)                    787.4 (31.0)
   BLOWER INLET P MM. H2O(IN. H2O)                  787.4 (31.0)
   BLOWER INLET TEMP. DEG. C(DEG. F)                 40.6 (105.0)
   BLOWER REVOLUTIONS                                  57362.
   TOT FLOW STD. CU. METRES(SCF)                    106.8 ( 3771.)
   THC SAMPLE METER/RANGE/PPM                       13.6/ 3/ 136.
   THC BCKGRD METER/RANGE/PPM                        1.7/ 3/  17.
   CO  SAMPLE METER/RANGE/PPM                       26.9/ 3/ 625.
   CO  BCKGRD METER/RANGE/PPM                         .1/ 3/   2.
   CO2 SAMPLE METER/RANGE/PCT                       23.7/ 3/  .39
   CO2 BCKGRD METER/RANGE/PCT                        2.8/ 3/  .04
   NOX SAMPLE METER/RANGE/PPM                       12.6/ 2/  13.
   NOX BCKGRD METER/RANGE/PPM                         .8/ 2/   1.
   DILUTION FACTOR                                      29.17
   THC CONCENTRATION PPM                                120.
   CO  CONCENTRATION PPM                                606.
   CO2 CONCENTRATION PCT                                 .34
   NOX CONCENTRATION PPM                                11.8
   THC MASS GRAMS                                        7.36
   CO  MASS GRAMS                                       75.34
   CO2 MASS GRAMS                                      671.9
   NOX MASS GRAMS                                        2.47
   RUN TIME                SECONDS                     717.
        DFC, WET (DRY)                               .966 ( .946)
        SCF, WET (DRY)                              1.000 ( .976)
        VOL (SCM)                                      106.8
        SAM BLR (SCM)                                    0.00
        KM  (MEASURED)                                   .82

   TEST NUMBER,                                     936
   BAROMETER,              MM HG                     739.9
   HUMIDITY,               G/KG                       11.4
   TEMPERATURE,            DEG C                      23.3
   CARBON DIOXIDE,          G/KM                     822.0   G/min       56.2
   FUEL CONSUMPTION,        L/100KM                   42.48  L/100min     2.91

   HYDROCARBONS, (THC)      G/KM                       9.01  G/min        0.62
   CARBON MONOXIDE,         G/KM                      92.16  G/min        6.30
   OXIDES OF NITROGEN,      G/KM                       3.03  G/min        0.21
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TABLE D-10. TEST NO. 937 EMISSION RESULTS

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                                        C-IDLE- VEHICLE EMISSIONS RESULTS - ZEPHYR MALFUNCTION
                                                PROJECT 05-6619-004

TEST NO.   937      RUN   1                  VEHICLE NO.93                   TEST WEIGHT  1588. KG( 3500. LBS)
VEHICLE MODEL   82 MERCURY ZEPHYR            DATE     6/30/82                ACTUAL ROAD LOAD   8.0 KW( 10.7 HP)
ENGINE 3.3 L(200. CID) L-6                   BAG CART NO.  1                 GASOLINE  EM-518-F
TRANSMISSION A3                              DYNO NO.      3                 ODOMETER      0. KM(     0. MILES)
                                             CVS NO.   2

BAROMETER 741.68 MM HG(29.20 IN HG)          DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
RELATIVE HUMIDITY  62. PCT                   ABS. HUMIDITY 11.9 GM/KG        NOX HUMIDITY CORRECTION FACTOR  1.04
BAG RESULTS
   TEST CYCLE                                   C-ID

   BLOWER DIF P MM. H2O(IN. H2O)             787.4 (31.0)
   BLOWER INLET P MM. H2O(IN. H2O)           774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)          43.3 (110.0)
   BLOWER REVOLUTIONS                           24013.
   TOT FLOW STD. CU. METRES(SCF)              44.6 ( 1574.)
   THC  SAMPLE METER/RANGE/PPM               29.9/ 3/ 299.
   THC  BCKGRD METER/RANGE/PPM                1.7/ 3/  17.
   CO   SAMPLE METER/RANGE/PPM               79.0/ 3/2125.
   CO   BCKGRD METER/RANGE/PPM                 .1/ 3/   2.
   CO2 SAMPLE METER/RANGE/PCT                46.6/ 3/  .80
   CO2 BCKGRD METER/RANGE/PCT                 2.7/ 3/  .04
   NOX SAMPLE METER/RANGE/PPM                53.6/ 2/  54.
   NOX BCKGRD METER/RANGE/PPM                  .8/ 2/   1.
   DILUTION FACTOR                               12.92
   THC CONCENTRATION PPM                         283.
   CO  CONCENTRATION PPM                        2047.
   CO2 CONCENTRATION PCT                          .76
   NOX CONCENTRATION PPM                         52.9
   THC  MASS GRAMS                               7.28
   CO   MASS GRAMS                             106.22
   CO2 MASS GRAMS                              623.3
   NOX MASS GRAMS                                4.69
   RUN TIME                SECONDS              300.
        DFC, WET (DRY)                        .923 ( .904)
        SCF, WET (DRY)                       1.000 ( .972)
        VOL (SCM)                                44.6
        SAM BLR (SCM)                            0.00

   TEST NUMBER,                                 937
   BAROMETER,              MM HG                741.7
   HUMIDITY,               G/KG                  11.9
   TEMPERATURE,            DEG C                 23.9
   CARBON DIOXIDE,          G/min               124.7
   FUEL CONSUMPTION,        L/min                 6.94

   HYDROCARBONS, (THC)      G/min                 1.46
   CARBON MONOXIDE,         G/min                21.25
   OXIDES OF NITROGEN,      G/min                  .94
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                                        H-IDLE- VEHICLE EMISSIONS RESULTS - ZEPHYR MALFUNCTION
                                                PROJECT 05-6619-004

TEST NO.   937      RUN   1                  VEHICLE NO.93                   TEST WEIGHT  1588. KG( 3500. LBS)
VEHICLE MODEL   82 MERCURY ZEPHYR            DATE     6/30/82                ACTUAL ROAD LOAD   8.0 KW( 10.7 HP)
ENGINE 3.3 L(200. CID) L-6                   BAG CART NO.  1                 GASOLINE  EM-518-F
TRANSMISSION A3                              DYNO NO.      3                 ODOMETER      0. KM(     0. MILES)
                                             CVS NO.   2

BAROMETER 741.68 MM HG(29.20 IN HG)          DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
RELATIVE HUMIDITY  59. PCT                   ABS. HUMIDITY 11.2 GM/KG        NOX HUMIDITY CORRECTION FACTOR  1.02
BAG RESULTS
   TEST CYCLE                                   H-ID

   BLOWER DIF P MM. H2O(IN. H2O)             774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)           774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)          42.8 (109.0)
   BLOWER REVOLUTIONS                           24003.
   TOT FLOW STD. CU. METRES(SCF)              44.6 ( 1575.)
   THC  SAMPLE METER/RANGE/PPM               10.9/ 3/ 109.
   THC  BCKGRD METER/RANGE/PPM                1.7/ 3/  17.
   CO   SAMPLE METER/RANGE/PPM               66.5/11/ 273.
   CO   BCKGRD METER/RANGE/PPM                1.4/11/   4.
   CO2 SAMPLE METER/RANGE/PCT                18.8/ 3/  .30
   CO2 BCKGRD METER/RANGE/PCT                 2.6/ 3/  .04
   NOX SAMPLE METER/RANGE/PPM                 7.0/ 2/   7.
   NOX BCKGRD METER/RANGE/PPM                  .7/ 2/   1.
   DILUTION FACTOR                               39.54
   THC CONCENTRATION PPM                          92.
   CO  CONCENTRATION PPM                         253.
   CO2 CONCENTRATION PCT                          .26
   NOX CONCENTRATION PPM                          6.3
   THC  MASS GRAMS                               2.38
   CO   MASS GRAMS                              13.64
   CO2 MASS GRAMS                              214.4
   NOX MASS GRAMS                                 .55
   RUN TIME                SECONDS              300.
        DFC, WET (DRY)                        .975 ( .956)
        SCF, WET (DRY)                       1.000 ( .978)
        VOL (SCM)                                44.6
        SAM BLR (SCM)                            0.00

   TEST NUMBER,                                 937
   BAROMETER,              MM HG                741.7
   HUMIDITY,               G/KG                  11.2
   TEMPERATURE,            DEG C                 23.9
   CARBON DIOXIDE,          G/min                42.9
   FUEL CONSUMPTION,        L/100min              2.08

   HYDROCARBONS, (THC)      G/min                  .48
   CARBON MONOXIDE,         G/min                 2.73
   OXIDES OF NITROGEN,      G/min                  .11
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TABLE D-10 (Cont'd). TEST NO. 937 EMISSION RESULTS

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                                          C-NYCC- VEHICLE EMISSIONS RESULTS - ZEPHYR MALFUNCTION
                                                  PROJECT 05-6619-004

TEST NO.   937       RUN   1
VEHICLE MODEL   82 MERCURY ZEPHYR                 VEHICLE NO.93                      TEST WEIGHT  1588. KG( 3500. LBS)
ENGINE 3.3 L(200. CID) L-6                        DATE    6/30/82                    ACTUAL ROAD LOAD   8.0 KW( 10.7 HP)
TRANSMISSION A3                                   BAG CART NO.  1                    GASOLINE  EM-518-F
                                                  DYNO NO.      3                    ODOMETER 11595. KM( 7205. MILES)
                                                  CVS NO.   2

BAROMETER 740.16 MM HG(29.14 IN HG)               DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)
RELATIVE HUMIDITY  59. PCT                        ABS. HUMIDITY 11.7 GM/KG           NOX HUMIDITY CORRECTION FACTOR  1.03
BAG RESULTS
   TEST CYCLE                                        C-NY

   BLOWER DIF P MM. H2O(IN. H2O)                  787.4 (31.0)
   BLOWER INLET P MM. H2O(IN. H2O)                774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)               41.7 (107.0)
   BLOWER REVOLUTIONS                               57548.
   TOT FLOW STD. CU. METRES(SCF)                  106.9 ( 3774.)
   THC SAMPLE METER/RANGE/PPM                     17.9/ 3/ 179.
   THC BCKGRD METER/RANGE/PPM                      1.6/ 3/  16.
   CO  SAMPLE METER/RANGE/PPM                     42.0/ 3/1007.
   CO  BCKGRD METER/RANGE/PPM                       .1/ 3/   2.
   CO2 SAMPLE METER/RANGE/PCT                     25.8/ 3/  .42
   CO2 BCKGRD METER/RANGE/PCT                      2.7/ 3/  .04
   NOX SAMPLE METER/RANGE/PPM                     15.0/ 2/  15.
   NOX BCKGRD METER/RANGE/PPM                      1.2/ 2/   1.
   DILUTION FACTOR                                   24.94
   THC CONCENTRATION PPM                             164.
   CO  CONCENTRATION PPM                             977.
   CO2 CONCENTRATION PCT                              .38
   NOX CONCENTRATION PPM                             13.8
   THC MASS GRAMS                                    10.09
   CO  MASS GRAMS                                   121.60
   CO2 MASS GRAMS                                   747.4
   NOX MASS GRAMS                                     2.92
   RUN TIME                  SECONDS                718.
        DFC, WET (DRY)                            .960 ( .942)
        SCF, WET (DRY)                           1.000 ( .977)
        VOL (SCM)                                   106.9
        SAM BLR (SCM)                                0.00
        KM  (MEASURED)                                .82

   TEST NUMBER,                                    937
   BAROMETER,                MM HG                  740.2
   HUMIDITY,                 G/KG                    11.7
   TEMPERATURE,              DEG C                   24.4
   CARBON DIOXIDE,            G/KM                  908.9    G/min        62.5
   FUEL CONSUMPTION,         L/100KM                 50.37   L/100min      3.45

   HYDROCARBONS, (THC)       G/KM                    12.26   G/min         0.84
   CARBON MONOXIDE,          G/KM                   148.29   G/min        10.16
   OXIDES OF NITROGEN,       G/KM                     3.56   G/min         0.24
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                                          H-NYCC- VEHICLE EMISSIONS RESULTS - ZEPHYR MALFUNCTION
                                                  PROJECT 05-6619-004

TEST NO.   937       RUN   1
VEHICLE MODEL   82 MERCURY ZEPHYR                 VEHICLE NO.93                      TEST WEIGHT  1588. KG( 3500. LBS)
ENGINE 3.3 L(200. CID) L-6                        DATE    6/30/82                    ACTUAL ROAD LOAD   8.0 KW( 10.7 HP)
TRANSMISSION A3                                   BAG CART NO.  1                    GASOLINE  EM-518-F
                                                  DYNO NO.      3                    ODOMETER      0. KM(     0. MILES)
                                                  CVS NO.   2

BAROMETER 741.68 MM HG(29.20 IN HG)               DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
RELATIVE HUMIDITY  62. PCT                        ABS. HUMIDITY 11.9 GM/KG           NOX HUMIDITY CORRECTION FACTOR  1.04
BAG RESULTS
   TEST CYCLE                                        H-NY

   BLOWER DIF P MM. H2O(IN. H2O)                  787.4 (31.0)
   BLOWER INLET P MM. H2O(IN. H2O)                787.4 (31.0)
   BLOWER INLET TEMP. DEG. C(DEG. F)               43.3 (110.0)
   BLOWER REVOLUTIONS                               57360.
   TOT FLOW STD. CU. METRES(SCF)                  106.3 ( 3753.)
   THC SAMPLE METER/RANGE/PPM                     13.3/ 3/ 133.
   THC BCKGRD METER/RANGE/PPM                      1.8/ 3/  18.
   CO  SAMPLE METER/RANGE/PPM                     25.9/ 3/ 601.
   CO  BCKGRD METER/RANGE/PPM                       .2/ 3/   5.
   CO2 SAMPLE METER/RANGE/PCT                     23.9/ 3/  .39
   CO2 BCKGRD METER/RANGE/PCT                      2.9/ 3/  .04
   NOX SAMPLE METER/RANGE/PPM                     12.4/ 2/  12.
   NOX BCKGRD METER/RANGE/PPM                       .7/ 2/   1.
   DILUTION FACTOR                                   29.12
   THC CONCENTRATION PPM                             116.
   CO  CONCENTRATION PPM                             580.
   CO2 CONCENTRATION PCT                              .35
   NOX CONCENTRATION PPM                             11.7
   THC MASS GRAMS                                     7.09
   CO  MASS GRAMS                                    71.79
   CO2 MASS GRAMS                                   672.7
   NOX MASS GRAMS                                     2.48
   RUN TIME                  SECONDS                717.
        DFC, WET (DRY)                            .966 ( .946)
        SCF, WET (DRY)                           1.000 ( .976)
        VOL (SCM)                                   106.3
        SAM BLR (SCM)                                0.00
        KM  (MEASURED)                                .77

   TEST NUMBER,                                    937
   BAROMETER,                MM HG                  741.7
   HUMIDITY,                 G/KG                    11.9
   TEMPERATURE,              DEG C                   23.9
   CARBON DIOXIDE,            G/KM                  876.8    G/min        56.3
   FUEL CONSUMPTION,         L/100KM                 44.95   L/100min      2.90

   HYDROCARBONS, (THC)       G/KM                     9.24   G/min         0.59
   CARBON MONOXIDE,          G/KM                    73.57   G/min         6.01
   OXIDES OF NITROGEN,       G/KM                     3.23   G/min         0.21
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TABLE D-11. TEST NO. 938 EMISSION RESULTS

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                                      C-IDLE- VEHICLE EMISSIONS RESULTS - ZEPHYR MALFUNCTION
                                              PROJECT 05-6619-004

TEST NO.   938      RUN   1                VEHICLE NO.93                  TEST WEIGHT  1588. KG( 3500. LBS)
VEHICLE MODEL   82 MERCURYZE PHYR          DATE    7/ 1/82                ACTUAL ROAD LOAD   8.0 KW( 10.7 HP)
ENGINE 3.3 L(200. CID) I-6                 BAG CART NO.  1                GASOLINE  EM-518-F
TRANSMISSION A3                            DYNO NO.      3                ODOMETER 11595. KM( 7205. MILES)
                                           CVS NO.   2

BAROMETER 744.73 MM HG(29.32 IN HG)        DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
RELATIVE HUMIDITY  62. PCT                 ABS. HUMIDITY 11.8 GM/KG       NOX HUMIDITY CORRECTION FACTOR  1.04
BAG RESULTS
   TEST CYCLE                                C-ID

   BLOWER DIF P MM. H2O(IN. H2O)           787.4 (31.0)
   BLOWER INLET P MM. H2O(IN. H2O)         787.4 (31.0)
   BLOWER INLET TEMP. DEG. C(DEG. F)        43.3 (110.0)
   BLOWER REVOLUTIONS                        24095.
   TOT FLOW STD. CU. METRES(SCF)            44.9 ( 1586.)
   THC  SAMPLE METER/RANGE/PPM             36.7/ 3/ 367.
   THC  BCKGRD METER/RANGE/PPM              2.1/ 3/  21.
   CO   SAMPLE METER/RANGE/PPM             63.2/ 2/3214.
   CO   BCKGRD METER/RANGE/PPM               .1/ 2/   4.
   CO2  SAMPLE METFR/RANGE/PCT             64.0/ 3/ 1.14
   CO2  BCKGRD METER/RANGE/PCT              3.0/ 3/  .05
   NOX  SAMPLE METER/RANGE/PPM             59.3/ 2/  59.
   NOX  BCKGRD METER/RANGE/PPM              2.0/ 2/   2.
   DILUTION FACTOR                             9.01
   THC  CONCENTRATION PPM                     348.
   CO   CONCENTRATION PPM                    3075.
   CO2  CONCENTRATION PCT                      1.10
   NOX  CONCENTRATION PPM                     57.5
   THC  MASS GRAMS                             9.02
   CO   MASS GRAMS                           160.79
   CO2  MASS GRAMS                           906.2
   NOX  MASS GRAMS                             5.13
   RUN TIME                SECONDS            300.
        DFC, WET (DRY)                      .889 ( .871)
        SCF, WET (DRY)                     1.000 ( .969)
        VOL (SCM)                             44.9
        SAM BLR (SCM)                          0.00

   TEST NUMBER,                              938
   BAROMETER,              MM HG             744.7
   HUMIDITY,               G/KG               11.8
   TEMPERATURE,            DEG C              23.9
   CARBON DIOXIDE,          G/min            181.3
   FUEL CONSUMPTION,        L/100min          10.14

   HYDROCARBONS, (THC)     G/ min              1.80
   CARBON MONOXIDE,        G/ min             32.16
   OXIDES OF NITROGEN,     G/ min              1.03

                                      H-IDLE- VEHICLE EMISSIONS RESULTS - ZEPHYR MALFUNCTION
                                              PROJECT 05-6619-004

TEST NO.   938      RUN   1                VEHICLE NO.93                  TEST WEIGHT  1588. KG( 3500. LBS)
VEHICLE MODEL   82 MERCURY ZEPHYR          DATE    7/ 1/82                ACTUAL ROAD LOAD   8.0 KW( 10.7 HP)
ENGINE 3.3 L(200. CID) L-6                 BAG CART NO.  1                GASOLINE  EM-518-F
TRANSMISSION A3                            DYNO NO.      3                ODOMETER 11602. KM( 7209. MILES)
                                           CVS NO.   2

BAROMETER 744.73 MM HG(29.32 IN HG)        DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
RELATIVE HUMIDITY  62. PCT                 ABS. HUMIDITY 11.8 GM/KG       NOX HUMIDITY CORRECTION FACTOR  1.04
BAG RESULTS
   TEST CYCLE                                H-ID

   BLOWER DIF P MM. H2O(IN. H2O)           787.4 (31.0)
   BLOWER INLET P MM. H2O(IN. H2O)         787.4 (31.0)
   BLOWER INLET TEMP. DEG. C(DEG. F)        42.2 (108.0)
   BLOWER REVOLUTIONS                        24092.
   TOT FLOW STD. CU. METRES(SCF)            45.0 ( 1589.)
   THC  SAMPLE METER/RANGE/PPM             11.6/ 3/ 116.
   THC  BCKGRD METER/RANGE/PPM              1.7/ 3/  17.
   CO   SAMPLE METER/RANGE/PPM             23.3/ 3/ 538.
   CO   BCKGRD METER/RANGE/PPM               .2/ 3/   5.
   CO2  SAMPLE METER/RANGE/PCT             19.2/ 3/  .31
   CO2  BCKGRD METER/RANGE/PCT              2.5/ 3/  .04
   NOX  SAMPLE METER/RANGE/PPM              7.7/ 2/   8.
   NOX  BCKGRD METER/RANGE/PPM              1.9/ 2/   2.
   DILUTION FACTOR                            36.01
   THC  CONCENTRATION PPM                      99.
   CO   CONCENTRATION PPM                     520.
   CO2  CONCENTRATION PCT                      .27
   NOX  CONCENTRATION PPM                      5.9
   THC  MASS GRAMS                             2.58
   CO   MASS GRAMS                            27.24
   CO2  MASS GRAMS                           225.2
   NOX  MASS GRAMS                              .32
   RUN TIME                SECONDS            300.
        DFC, WET (DRY)                      .972 ( .953)
        SCF, WET (DRY)                     1.000 ( .977)
        VOL (SCM)                             45.0
        SAM BLR (SCM)                          0.00
                                               5.00

   TEST NUMBER,                              938
   BAROMETER,              MM HG             744.7
   HUMIDITY,               G/KG               11.8
   TEMPERATURE,            DEG C              23.9
   CARBON DIOXIDE,          G/min             44.7
   FUEL CONSUMPTION,        L/100min           2.34

   HYDROCARBONS, (THC)     G/min                .52
   CARBON MONOXIDE,        G/min               5.45
   OXIDES OF NITROGEN,     G/min                .10
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TABLE D-11 (Cont'd). TEST NO. 938 EMISSION RESULTS

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                                         C-NYCC- VEHICLE EMISSIONS RESULTS - ZEPHYR MALFUNCTION
                                                 PROJECT 05-6619-004

TEST NO.   938       RUN   1                       VEHICLE NO.93                          TEST WEIGHT  1588. KG( 3500. LBS)
VEHICLE MODEL   82 MERCURY ZEPHYR                  DATE     7/ 1/82                       ACTUAL ROAD LOAD   8.0 KW( 10.7 HP)
ENGINE 3.3 L(200. CID) L-6                         BAG CART NO.  1                        GASOLINE  EM-518-F
TRANSMISSION A3                                    DYNO NO.      3                        ODOMETER 11611. KM( 7215. MILES)
                                                   CVS NO.   2

BAROMETER 743.46 MM HG(29.27 IN HG)                DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)
RELATIVE HUMIDITY  58. PCT                         ABS. HUMIDITY 10.7 GM/KG               NOX HUMIDITY CORRECTION FACTOR  1.00
BAG RESULTS
   TEST CYCLE                                        C-NY

   BLOWER DIF P MM. H2O(IN. H2O)                   787.4 (31.0)
   BLOWER INLET P MM. H2O(IN. H2O)                 787.4 (31.0)
   BLOWER INLET TEMP. DEG. C(DEG. F)                41.7 (107.0)
   BLOWER REVOLUTIONS                                 58002.
   TOT FLOW STD. CU. METRES(SCF)                   108.2 ( 3822.)
   THC SAMPLE METER/RANGE/PPM                      19.1/ 3/ 191.
   THC BCKGRD METER/RANGE/PPM                       2.0/ 3/  20.
   CO  SAMPLE METER/RANGE/PPM                      51.4/ 3/1262.
   CO  BCKGRD METER/RANGE/PPM                        .1/ 3/   2.
   CO2 SAMPLE METER/RANGE/PCT                      27.1/ 3/  .44
   CO2 BCKGRD METER/RANGE/PCT                       2.5/ 3/  .04
   NOX SAMPLE METER/RANGE/PPM                      14.2/ 2/  14.
   NOX BCKGRD METER/RANGE/PPM                       1.4/ 2/   1.
   DILUTION FACTOR                                     22.86
   THC CONCENTRATION PPM                               172.
   CO  CONCENTRATION PPM                              1225.
   CO2 CONCENTRATION PCT                                .41
   NOX CONCENTRATION PPM                               12.9
   THC MASS GRAMS                                      10.73
   CO  MASS GRAMS                                     154.43
   CO2 MASS GRAMS                                     808.2
   NOX MASS GRAMS                                       2.66
   RUN TIME                 SECONDS                   723.
        DFC, WET (DRY)                             .956 ( .938)
        SCF, WET (DRY)                            1.000 ( .977)
        VOL (SCM)                                     108.2
        SAM BLR (SCM)                                 0.00
        KM  (MEASURED)                                 .78

   TEST NUMBER,                                     938
   BAROMETER,              MM HG                     743.5
   HUMIDITY,               G/KG                       10.7
   TEMPERATURE,            DEG C                      23.3
   CARBON DIOXIDE,          G/KM                    1037.5    G/min        67.1
   FUEL CONSUMPTION,        L/100KM                   59.45   L/100min      3.85

   HYDROCARBONS, (THC)      G/KM                      13.77   G/min         0.89
   CARBON MONOXIDE,         G/KM                    197.99    G/min        12.82
   OXIDES OF NITROGEN,      G/KM                       3.41   G/min         0.22

                                         H-NYCC- VEHICLE EMISSIONS RESULTS - ZEPHYR MALFUNCTION
                                                 PROJECT 05-6619-004

TEST NO.   938       RUN   1                       VEHICLE NO.93                          TEST WEIGHT  1588. KG( 3500. LBS)
VEHICLE MODEL   82 MERCURY ZEPHYR                  DATE     7/ 1/82                       ACTUAL ROAD LOAD   8.0 KW( 10.7 HP)
ENGINE 3.3 L(200. CID) L06                         BAG CART NO.  1                        GASOLINE  EM-518-F
TRANSMISSION A3                                    DYNO NO.      3                        ODOMETER 11607. KM( 7212. MILES)
                                                   CVS NO.   2

BAROMETER 744.73 MM HG(29.32 IN HG)                DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
RELATIVE HUMIDITY  62. PCT                         ABS. HUMIDITY 11.8 GM/KG               NOX HUMIDITY CORRECTION FACTOR  1.04
BAG RESULTS
   TEST CYCLE                                        H-NY

   BLOWER DIF P MM. H2O(IN. H2O)                   787.4 (31.0)
   BLOWER INLET P MM. H2O(IN. H2O)                 787.4 (31.0)
   BLOWER INLET TEMP. DEG. C(DEG. F)                39.4 (103.0)
   BLOWER REVOLUTIONS                                 57734.
   TOT FLOW STD. CU. METRES(SCF)                   108.4 ( 3827.)
   THC SAMPLE METER/RANGE/PPM                      14.0/ 3/ 140.
   THC BCKGRD METER/RANGE/PPM                       1.7/ 3/  17.
   CO  SAMPLE METER/RANGE/PPM                      27.8/ 3/ 647.
   CO  BCKGRD METER/RANGE/PPM                        .1/ 3/   2.
   CO2 SAMPLE METER/RANGE/PCT                      23.8/ 3/  .39
   CO2 BCKGRD METER/RANGE/PCT                       2.7/ 3/  .04
   NOX SAMPLE METER/RANGE/PPM                      14.1/ 2/  14.
   NOX BCKGRD METER/RANGE/PPM                       1.4/ 2/   1.
   DILUTION FACTOR                                     28.90
   THC CONCENTRATION PPM                               124.
   CO  CONCENTRATION PPM                               627.
   CO2 CONCENTRATION PCT                                .35
   NOX CONCENTRATION PPM                               12.7
   THC MASS GRAMS                                       7.72
   CO  MASS GRAMS                                      79.15
   CO2 MASS GRAMS                                     688.4
   NOX MASS GRAMS                                       2.74
   RUN TIME                 SECONDS                   721.
        DFC, WET (DRY)                             .965 ( .946)
        SCF, WET (DRY)                            1.000 ( .976)
        VOL (SCM)                                     108.4
        SAM BLR (SCM)                                 0.00
        KM  (MEASURED)                                 .80

   TEST NUMBER,                                     938
   BAROMETER,              MM HG                     744.7
   HUMIDITY,               G/KG                       11.8
   TEMPERATURE,            DEG C                      23.9
   CARBON DIOXIDE,          G/KM                     858.8    G/min        57.3
   FUEL CONSUMPTION,        L/100KM                   44.58   L/100min      2.97

   HYDROCARBONS, (THC)      G/KM                       9.64   G/min         0.64
   CARBON MONOXIDE,         G/KM                      98.73   G/min         6.59
   OXIDES OF NITROGEN,      G/KM                       3.42   G/min         0.23
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TABLE D-12. TEST NO. 941 EMISSION RESULTS

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                                                C-IDLE- VEHICLE EMISSIONS RESULTS -RABBIT BASELINE
                                                         PROJECT 05-6619-004

TEST NO.    941       RUN                            VEHICLE NO.94                       TEST WEIGHT  1134. KG( 2500. LBS)
VEHICLE MODEL    81 VW RABBIT                        DATE     7/21/82                    ACTUAL ROAD LOAD    5.7 KW(  7.7 HP)
ENGINE 1.7 L(105. CID) L-4                           BAG CART NO.  1                     GASOLINE  EM-518-F
TRANSMISSION A3                                      DYNO NO.      3                     ODOMETER 16156. KM(10039. MILES)
                                                     CVS NO.   2

BAROMETER 742.70 MM HG(29.24 IN HG)                  DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
RELATIVE HUMIDITY  66. PCT                           ABS. HUMIDITY 12.6 GM/KG            NOX HUMIDITY CORRECTION FACTOR  1.07
BAG RESULTS
   TEST CYCLE                                           C-IDLE

   BLOWER DIF P MM. H2O(IN. H2O)                     774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)                   774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)                  43.3 (110.0)
   BLOWER REVOLUTIONS                                     24079.
   TOT FLOW STD. CU. METRES(SCF)                      44.8 ( 1581.)
   THC SAMPLE METER/RANGE/PPM                        93.8/ 2/  94.
   THC BCKGRD METER/RANGE/PPM                        14.7/ 2/  15.
   CO  SAMPLE METER/RANGE/PPM                        77.7/11/ 346.
   CO  BCKGRD METER/RANGE/PPM                         1.7/11/   5.
   CO2 SAMPLE METER/RANGE/PCT                        25.1/ 3/  .41
   CO2 BCKGRD METER/RANGE/PCT                         3.1/ 3/  .05
   NOX SAMPLE METER/RANGE/PPM                         8.8/ 2/   9.
   NOX BCKGRD METER/RANGE/PPM                         1.5/ 2/   2.
   DILUTION FACTOR                                       29.63
   THC CONCENTRATION PPM                                  80.
   CO  CONCENTRATION PPM                                 331.
   CO2 CONCENTRATION PCT                                  .36
   NOX CONCENTRATION PPM                                  7.4
   THC MASS GRAMS                                         2.06
   CO  MASS GRAMS                                        17.26
   CO2 MASS GRAMS                                       298.0
   NOX MASS GRAMS                                          .67
   RUN TIME                   SECONDS                    300.
        DFC, WET (DRY)                                .966 ( .946)
        SCF, WET (DRY)                               1.000 ( .975)
        VOL (SCM)                                         44.8
        SAM BLR (SCM)                                     0.00

   TEST NUMBER,                                         941
   BAROMETER,             MM HG                          742.7
   HUMIDITY,              G/KG                            12.6
   TEMPERATURE,           DEG C                           23.9
   CARBON DIOXIDE,         G/ MIN                         59.6
   FUEL CONSUMPTION,       L/100 MIN                      2.83

   HYDROCARBONS, (THC)    G/MIN                            .41
   CARBON MONOXIDE,       G/MIN                           3.45
   OXIDES OF NITROGEN,    G/MIN                            .13

                                                H IDLE- VEHICLE EMISSIONS RESULTS -RABBIT BASELINE
                                                         PROJECT 05-6619-004

TEST NO.    941       RUN                            VEHICLE NO.94                       TEST WEIGHT  1134. KG( 2500. LBS)
VEHICLE MODEL    81 VW RABBIT                        DATE     7/21/82                    ACTUAL ROAD LOAD    5.7 KW(  7.7 HP)
ENGINE 1.7 L(105. CID) L-4                           BAG CART NO.  1                     GASOLINE  EM-518-F
TRANSMISSION A3                                      DYNO NO.      3                     ODOMETER 16163. KM(10043. MILES)
                                                     CVS NO.   2

BAROMETER 742.70 MM HG(29.24 IN HG)                  DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
RELATIVE HUMIDITY  62. PCT                           ABS. HUMIDITY 11.9 GM/KG            NOX HUMIDITY CORRECTION FACTOR  1.04
BAG RESULTS
   TEST CYCLE                                           H IDLE

   BLOWER DIF P MM. H2O(IN. H2O)                     774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)                   774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)                  37.8 (100.0)
   BLOWER REVOLUTIONS                                     24019.
   TOT FLOW STD. CU. METRES(SCF)                      45.1 ( 1594.)
   THC SAMPLE METER/RANGE/PPM                        16.3/ 2/  16.
   THC BCKGRD METER/RANGE/PPM                        15.8/ 2/  16.
   CO  SAMPLE METER/RANGE/PPM                         5.4/13/   5.
   CO  BCKGRD METER/RANGE/PPM                         4.0/13/   4.
   CO2 SAMPLE METER/RANGE/PCT                        20.5/ 3/  .33
   CO2 BCKGRD METER/RANGE/PCT                         2.8/ 3/  .04
   NOX SAMPLE METER/RANGE/PPM                         3.0/ 2/   3.
   NOX BCKGRD METER/RANGE/PPM                         1.2/ 2/   1.
   DILUTION FACTOR                                       40.33
   THC CONCENTRATION PPM                                   1.
   CO  CONCENTRATION PPM                                   1.
   CO2 CONCENTRATION PCT                                  .29
   NOX CONCENTRATION PPM                                  1.8
   THC MASS GRAMS                                          .02
   CO  MASS GRAMS                                          .07
   CO2 MASS GRAMS                                       238.3
   NOX MASS GRAMS                                          .16
   RUN TIME                   SECONDS                    300.
        DFC, WET (DRY)                                .975 ( .956)
        SCF, WET (DRY)                               1.000 ( .977)
        VOL (SCM)                                         45.1
        SAM BLR (SCM)                                     0.00

   TEST NUMBER,                                         941
   BAROMETER,             MM HG                          742.7
   HUMIDITY,              G/KG                            11.9
   TEMPERATURE,           DEG C                           23.9
   CARBON DIOXIDE,         G/MIN                          47.7
   FUEL CONSUMPTION,       L/100 MIN                      2.04

   HYDROCARBONS, (THC)    G/MIN                            .00
   CARBON MONOXIDE,       G/MIN                            .01
   OXIDES OF NITROGEN,    G/MIN                            .03
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TABLE D-12 (Cont'd). TEST NO. 941 EMISSION RESULTS

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                                                  CNYCC - VEHICLE EMISSIONS RESULTS -RABBIT BASELINE
                                                              PROJECT 05-6619-004

TEST NO.   941      RUN                            VEHICLE NO.94                          TEST WEIGHT  1134. KG( 2500. LBS)
VEHICLE MODEL   81 VW RABBIT                       DATE     7/21/82                       ACTUAL ROAD LOAD   5.7 KW(  7.7 HP)
ENGINE 1.7 L(105. CID) L-4                         BAG CART NO.  1                        GASOLINE  EM-518-F
TRANSMISSION A3                                    DYNO NO.      3                        ODOMETER 16176. KM(10051. MILES)
                                                   CVS NO.   2

BAROMETER 741.17 MM HG(29.18 IN HG)                DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
RELATIVE HUMIDITY  48. PCT                         ABS. HUMIDITY  9.1 GM/KG               NOX HUMIDITY CORRECTION FACTOR   .95
BAG RESULTS
   TEST CYCLE                                         CNYCC

   BLOWER DIF P MM. H2O(IN. H2O)                   774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)                 774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)                42.2 (108.0)
   BLOWER REVOLUTIONS                                 57812.
   TOT FLOW STD. CU. METRES(SCF)                   107.5 ( 3795.)
   THC  SAMPLE METER/RANGE/PPM                     35.0/ 2/  35.
   THC  BCKGRD METER/RANGE/PPM                     17.6/ 2/  18.
   CO   SAMPLE METER/RANGE/PPM                     70.6/13/  69.
   CO   BCKGRD METER/RANGE/PPM                     18.0/13/  16.
   CO2  SAMPLE METER/RANGE/PCT                     27.6/ 3/  .45
   CO2  BCKGRD METER/RANGE/PCT                      4.2/ 3/  .06
   NOX  SAMPLE METER/RANGE/PPM                      8.8/ 2/   9.
   NOX  BCKGRD METER/RANGE/PPM                      1.5/ 2/   2.
   DILUTION FACTOR                                    28.92
   THC CONCENTRATION PPM                               18.
   CO  CONCENTRATION PPM                               52.
   CO2 CONCENTRATION PCT                               .39
   NOX CONCENTRATION PPM                               7.4
   THC MASS GRAMS                                      1.12
   CO  MASS GRAMS                                      6.45
   CO2 MASS GRAMS                                     769.0
   NOX MASS GRAMS                                      1.43
   RUN TIME               SECONDS                     721.
        DFC, WET (DRY)                              .965 ( .951)
        SCF, WET (DRY)                             1.000 ( .980)
        VOL (SCM)                                     107.5
        SAM BLR (SCM)                                  0.00
        KM  (MEASURED)                                  .79

   TEST NUMBER,                                      941
   BAROMETER,             MM HG                       741.2
   HUMIDITY,              G/KG                          9.1
   TEMPERATURE,           DEG C                        23.9
   CARBON DIOXIDE,         G/KM                       974.4    G/MIN        64.0
   FUEL CONSUMPTION,       L/100KM                    42.33    L/100MIN      2.78

   HYDROCARBONS, (THC)     G/KM                        1.41    G/MIN         0.09
   CARBON MONOXIDE,        G/KM                        8.18    G/MIN         0.54
   OXIDES OF NITROGEN,     G/KM                        1.82    G/MIN         0.12
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                                                  HNYCC - VEHICLE EMISSIONS RESULTS -RABBIT BASELINE
                                                              PROJECT 05-6619-004

TEST NO.   941      RUN                            VEHICLE NO.94                          TEST WEIGHT  1134. KG( 2500. LBS)
VEHICLE MODEL   81 VW RABBIT                       DATE     7/21/82                       ACTUAL ROAD LOAD   5.7 KW(  7.7 HP)
ENGINE 1.7 L(105. CID) L-4                         BAG CART NO.  1                        GASOLINE  EM-518-F
TRANSMISSION A3                                    DYNO NO.      3                        ODOMETER 16167. KM(10046. MILES)
                                                   CVS NO.   2

BAROMETER 742.95 MM HG(29.25 IN HG)                DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
RELATIVE HUMIDITY  55. PCT                         ABS. HUMIDITY 10.4 GM/KG               NOX HUMIDITY CORRECTION FACTOR   .99
BAG RESULTS
   TEST CYCLE                                         HNYCC

   BLOWER DIF P MM. H2O(IN. H2O)                   774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)                 774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)                40.6 (105.0)
   BLOWER REVOLUTIONS                                 57818.
   TOT FLOW STD. CU. METRES(SCF)                   108.1 ( 3817.)
   THC  SAMPLE METER/RANGE/PPM                     16.7/ 2/  17.
   THC  BCKGRD METER/RANGE/PPM                     14.7/ 2/  15.
   CO   SAMPLE METER/RANGE/PPM                     17.0/13/  15.
   CO   BCKGRD METER/RANGE/PPM                      3.3/13/   3.
   CO2  SAMPLE METER/RANGE/PCT                     23.2/ 3/  .38
   CO2  BCKGRD METER/RANGE/PCT                      2.6/ 3/  .04
   NOX  SAMPLE METER/RANGE/PPM                      5.0/ 2/   5.
   NOX  BCKGRD METER/RANGE/PPM                      1.1/ 2/   1.
   DILUTION FACTOR                                    35.30
   THC CONCENTRATION PPM                                2.
   CO  CONCENTRATION PPM                               12.
   CO2 CONCENTRATION PCT                               .34
   NOX CONCENTRATION PPM                               3.9
   THC MASS GRAMS                                      .15
   C   MASS GRAMS                                      1.54
   CO2 MASS GRAMS                                     668.5
   NOX MASS GRAMS                                      .81
   RUN TIME               SECONDS                     725.
        DFC, WET (DRY)                              .972 ( .954)
        SCF, WET (DRY)                             1.000 ( .979)
        VOL (SCM)                                     108.1
        SAM BLR (SCM)                                  0.00
        KM  (MEASURED)                                  .81

   TEST NUMBER,                                      941
   BAROMETER,             MM HG                       743.0
   HUMIDITY,              G/KG                         10.4
   TEMPERATURE,           DEG C                        23.9
   CARBON DIOXIDE,         G/KM                       821.2    G/MIN        55.5
   FUEL CONSUMPTION,       L/100KM                    35.20    L/100MIN      2.37

   HYDROCARBONS, (THC)     G/KM                         .19    G/MIN         0.01
   CARBON MONOXIDE,        G/KM                        1.89    G/MIN         0.13
   OXIDES OF NITROGEN,     G/KM                         .99    G/MIN         0.07
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TABLE D-13. TEST NO. 942 EMISSION RESULTS

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                                    C IDLE- VEHICLE EMISSIONS RESULTS -RABBIT BASELINE
                                                 PROJECT 05-6619-004

TEST NO.   942      RUN                          VEHICLE NO.94                        TEST WEIGHT  1134. KG( 2500. LBS)
VEHICLE MODEL   81 VW RABBIT                     DATE     7/22/82                     ACTUAL ROAD LOAD   5.7 KW(  7.7 HP)
ENGINE 1.7 L(105. CID) L-4                       BAG CART NO.  1                      GASOLINE  EM-518-F
TRANSMISSION A3                                  DYNO NO.      3                      ODOMETER 16188. KM(10059. MILES)
                                                 CVS NO.   2

BAROMETER 742.44 MM HG(29.23 IN HG)              DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
RELATIVE HUMIDITY  66. PCT                       ABS. HUMIDITY 12.6 GM/KG             NOX HUMIDITY CORRECTION FACTOR  1.07
BAG RESULTS
   TEST CYCLE                                       C IDLE

   BLOWER DIF P MM. H2O(IN. H2O)                 774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)               774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)              43.9 (111.0)
   BLOWER REVOLUTIONS                               24076.
   TOT FLOW STD. CU. METRES(SCF)                  44.7 ( 1579.)
   THC SAMPLE METER/RANGE/PPM                    63.6/ 2/  64.
   THC BCKGRD METER/RANGE/PPM                    17.5/ 2/  18.
   CO  SAMPLE METER/RANGE/PPM                    75.1/12/ 174.
   CO  BCKGRD METER/RANGE/PPM                     1.1/12/   2.
   CO2 SAMPLE METER/RANGE/PCT                    27.2/ 3/  .45
   CO2 BCKGRD METER/RANGE/PCT                     2.8/ 3/  .04
   NOX SAMPLE METER/RANGE/PPM                     6.2/ 2/   6.
   NOX BCKGRD METER/RANGE/PPM                     1.6/ 2/   2.
   DILUTION FACTOR                                   28.55
   THC CONCENTRATION PPM                              47.
   CO  CONCENTRATION PPM                             167.
   CO2 CONCENTRATION PCT                              .40
   NOX CONCENTRATION PPM                              4.7
   THC MASS GRAMS                                     1.20
   CO  MASS GRAMS                                     8.69
   CO2 MASS GRAMS                                   331.3
   NOX MASS GRAMS                                     .42
   RUN TIME               SECONDS                   300.
        DFC, WET (DRY)                           .965 ( .944)
        SCF, WET (DRY)                          1.000 ( .974)
        VOL (SCM)                                    44.7
        SAM BLR (SCM)                                0.00

   TEST NUMBER,                                   942
   BAROMETER,            MM HG                     742.4
   HUMIDITY,             G/KG                       12.6
   TEMPERATURE,          DEG C                      23.9
   CARBON DIOXIDE,        G/MIN                     66.3
   FUEL CONSUMPTION,      L/MIN                     2.98

   HYDROCARBONS, (THC)   G/MIN                       .24
   CARBON MONOXIDE,      G/MIN                      1.74
   OXIDES OF NITROGEN,   G/MIN                       .08
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                                    H IDLE- VEHICLE EMISSIONS RESULTS -RABBIT BASELINE
                                                 PROJECT 05-6619-004

TEST NO.   942      RUN                          VEHICLE NO.94                        TEST WEIGHT  1134. KG( 2500. LBS)
VEHICLE MODEL   81 VW RABBIT                     DATE     7/22/82                     ACTUAL ROAD LOAD   5.7 KW(  7.7 HP)
ENGINE 1.7 L(105. CID) L-4                       BAG CART NO.  1                      GASOLINE  EM-518-F
TRANSMISSION A3                                  DYNO NO.      3                      ODOMETER 16193. KM(10062. MILES)
                                                 CVS NO.   2

BAROMETER 742.44 MM HG(29.23 IN HG)              DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
RELATIVE HUMIDITY  62. PCT                       ABS. HUMIDITY 11.9 GM/KG             NOX HUMIDITY CORRECTION FACTOR  1.04
BAG RESULTS
   TEST CYCLE                                       H IDLE

   BLOWER DIF P MM. H2O(IN. H2O)                 774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)               774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)              42.2 (108.0)
   BLOWER REVOLUTIONS                               24058.
   TOT FLOW STD. CU. METRES(SCF)                  44.8 ( 1582.)
   THC SAMPLE METER/RANGE/PPM                    18.0/ 2/  18.
   THC BCKGRD METER/RANGE/PPM                    16.2/ 2/  16.
   CO  SAMPLE METER/RANGE/PPM                     4.1/13/   4.
   CO  BCKGRD METER/RANGE/PPM                     2.5/13/   2.
   CO2 SAMPLE METER/RANGE/PCT                    21.3/ 3/  .34
   CO2 BCKGRD METER/RANGE/PCT                     3.2/ 3/  .05
   NOX SAMPLE METER/RANGE/PPM                     4.7/ 2/   5.
   NOX BCKGRD METER/RANGE/PPM                     1.5/ 2/   2.
   DILUTION FACTOR                                   30.74
   THC CONCENTRATION PPM                              2.
   CO  CONCENTRATION PPM                              1.
   CO2 CONCENTRATION PCT                              .30
   NOX CONCENTRATION PPM                              3.2
   THC MASS GRAMS                                     .06
   CO  MASS GRAMS                                     .08
   CO2 MASS GRAMS                                   242.9
   NOX MASS GRAMS                                     .29
   RUN TIME               SECONDS                   300.
        DFC, WET (DRY)                           .974 ( .955)
        SCF, WET (DRY)                          1.000 ( .977)
        VOL (SCM)                                    44.8
        SAM BLR (SCM)                                0.00

   TEST NUMBER,                                   942
   BAROMETER,            MM HG                     742.4
   HUMIDITY,             G/KG                       11.9
   TEMPERATURE,          DEG C                      23.9
   CARBON DIOXIDE,        G/MIN                     48.6
   FUEL CONSUMPTION,      L/100MIN                  2.08

   HYDROCARBONS, (THC)   G/MIN                       .01
   CARBON MONOXIDE,      G/MIN                       .02
   OXIDES OF NITROGEN,   G/MIN                       .06
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TABLE D-13 (Cont'd). TEST NO. 942 EMISSION RESULTS

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                                                C NYCC- VEHICLE EMISSIONS RESULTS -RABBIT BASELINE
                                                        PROJECT 05-6619-004

TEST NO.   942       RUN                             VEHICLE NO.94                           TEST WEIGHT  1134. KG( 2500. LBS)
VEHICLE MODEL   81 VW RABBIT                         DATE     7/22/82                        ACTUAL ROAD LOAD   5.7 KW(  7.7 HP)
ENGINE 1.7 L(105. CID) L-4                           BAG CART NO.  1                         GASOLINE  EM-518-F
TRANSMISSION A3                                      DYNO NO.      3                         ODOMETER 16209. KM(10072. MILES)
                                                     CVS NO.   2

BAROMETER 742.19 MM HG(29.22 IN HG)                  DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)
RELATIVE HUMIDITY  56. PCT                           ABS. HUMIDITY 10.9 GM/KG                NOX HUMIDITY CORRECTION FACTOR  1.01
BAG RESULTS
   TEST CYCLE                                           C NYCC

   BLOWER DIF P MM. H2O(IN. H2O)                    774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)                  774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)                 42.8 (109.0)
   BLOWER REVOLUTIONS                                  57894.
   TOT FLOW STD. CU. METRES(SCF)                    107.7 ( 3802.)
   THC SAMPLE METER/RANGE/PPM                       32.8/ 2/  33.
   THC BCKGRD METER/RANGE/PPM                       15.1/ 2/  15.
   CO  SAMPLE METER/RANGE/PPM                       81.6/13/  81.
   CO  BCKGRD METER/RANGE/PPM                        3.6/13/   3.
   CO2 SAMPLE METER/RANGE/PCT                       25.8/ 3/  .42
   CO2 BCKGRD METER/RANGE/PCT                        3.0/ 3/  .05
   NOX SAMPLE METER/RANGE/PPM                        8.0/ 2/   8.
   NOX BCKGRD METER/RANGE/PPM                        1.3/ 2/   1.
   DILUTION FACTOR                                     30.97
   THC CONCENTRATION PPM                                18.
   CO  CONCENTRATION PPM                                76.
   CO2 CONCENTRATION PCT                                .38
   NOX CONCENTRATION PPM                                6.7
   THC MASS GRAMS                                       1.13
   CO  MASS GRAMS                                       9.50
   CO2 MASS GRAMS                                      743.4
   NOX MASS GRAMS                                       1.40
   RUN TIME              SECONDS                       723.
        DFC, WET (DRY)                               .968 ( .950)
        SCF, WET (DRY)                              1.000 ( .978)
        VOL (SCM)                                      107.7
        SAM BLR (SCM)                                  0.00
        KM  (MEASURED)                                  .79

   TEST NUMBER,                                       942
   BAROMETER,            MM HG                         742.2
   HUMIDITY,             G/KG                           10.9
   TEMPERATURE,          DEG C                          24.4
   CARBON DIOXIDE,        G/KM                         946.1     G/MIN        61.7
   FUEL CONSUMPTION,      L/100KM                      41.39     L/100KM       2.71

   HYDROCARBONS, (THC)    G/KM                          1.44     G/MIN        0.09
   CARBON MONOXIDE,       G/KM                         12.09     G/MIN        0.79
   OXIDES OF NITROGEN,    G/KM                          1.78     G/MIN        0.12

                                                H NYCC- VEHICLE EMISSIONS RESULTS -RABBIT BASELINE
                                                        PROJECT 05-6619-004

TEST NO.   942       RUN                             VEHICLE NO.94                           TEST WEIGHT  1134. KG( 2500. LBS)
VEHICLE MODEL   81 VW RABBIT                         DATE     7/22/82                        ACTUAL ROAD LOAD   5.7 KW(  7.7 HP)
ENGINE 1.7 L(105. CID) L-4                           BAG CART NO.  1                         GASOLINE  EM-518-F
TRANSMISSION A3                                      DYNO NO.      3                         ODOMETER 16200. KM(10066. MILES)
                                                     CVS NO.   2

BAROMETER 742.44 MM HG(29.23 IN HG)                  DRY BULB TEMP. 25.0 DEG C(77.0 DEG F)
RELATIVE HUMIDITY  60. PCT                           ABS. HUMIDITY 12.1 GM/KG                NOX HUMIDITY CORRECTION FACTOR  1.05
BAG RESULTS
   TEST CYCLE                                           H NYCC

   BLOWER DIF P MM. H2O(IN. H2O)                    774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)                  774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)                 43.3 (110.0)
   BLOWER REVOLUTIONS                                  57812.
   TOT FLOW STD. CU. METRES(SCF)                    107.5 ( 3794.)
   THC SAMPLE METER/RANGE/PPM                       17.0/ 2/  17.
   THC BCKGRD METER/RANGE/PPM                       15.5/ 2/  16.
   CO  SAMPLE METER/RANGE/PPM                       17.9/13/  16.
   CO  BCKGRD METER/RANGE/PPM                        2.1/13/   2.
   CO2 SAMPLE METER/RANGE/PCT                       23.1/ 3/  .37
   CO2 BCKGRD METER/RANGE/PCT                        2.8/ 3/  .04
   NOX SAMPLE METER/RANGE/PPM                        4.7/ 2/   5.
   NOX BCKGRD METER/RANGE/PPM                        1.5/ 2/   2.
   DILUTION FACTOR                                     35.45
   THC CONCENTRATION PPM                                 2.
   CO  CONCENTRATION PPM                                14.
   CO2 CONCENTRATION PCT                                .33
   NOX CONCENTRATION PPM                                3.2
   THC MASS GRAMS                                        .12
   CO  MASS GRAMS                                       1.76
   CO2 MASS GRAMS                                      655.2
   NOX MASS GRAMS                                        .70
   RUN TIME              SECONDS                       722.
        DFC, WET (DRY)                               .972 ( .953)
        SCF, WET (DRY)                              1.000 ( .977)
        VOL (SCM)                                      107.5
        SAM BLR (SCM)                                  0.00
        KM  (MEASURED)                                  .78

   TEST NUMBER,                                       942
   BAROMETER,            MM HG                         742.4
   HUMIDITY,             G/KG                           12.1
   TEMPERATURE,          DEG C                          25.0
   CARBON DIOXIDE,        G/KM                         837.5     G/MIN      54.4
   FUEL CONSUMPTION,      L/100KM                      35.92     L/100MIN    2.33

   HYDROCARBONS, (THC)    G/KM                           .15     G/MIN       0.01
   CARBON MONOXIDE,       G/KM                          2.24     G/MIN       0.14
   OXIDES OF NITROGEN,    G/KM                           .89     G/MIN       0.07
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TABLE D-14. TEST NO. 946 EMISSION RESULTS

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                                               C IDLE- VEHICLE EMISSIONS RESULTS -RABBIT MALFUNCTION
                                                    PROJECT 05-6619-004

TEST NO.   946      RUN                            VEHICLE NO.94                      TEST WEIGHT  1134. KG( 2500. LBS)
VEHICLE MODEL   81 VW RABBIT                       DATE    7/23/82                    ACTUAL ROAD LOAD   5.7 KW(  7.7 HP)
ENGINE 1.7 L(105. CID) L-4                         BAG CART NO.  1                    GASOLINE  EM-518-F
TRANSMISSION A3                                    DYNO NO.      3                    ODOMETER 16216. KM(10076. MILES)
                                                   CVS NO.   2

BAROMETER 742.95 MM HG(29.25 IN HG)                DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)
RELATIVE HUMIDITY  67. PCT                         ABS. HUMIDITY 13.1 GM/KG           NOX HUMIDITY CORRECTION FACTOR  1.09
BAG RESULTS
   TEST CYCLE                                         C IDLE

   BLOWER DIF P MM. H2O(IN. H2O)                  774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)                774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)               43.3 (110.0)
   BLOWER REVOLUTIONS                                24045.
   TOT FLOW STD. CU. METRES(SCF)                   44.7 ( 1579.)
   THC SAMPLE METER/RANGE/PPM                     21.1/ 3/ 211.
   THC BCKGRD METER/RANGE/PPM                      1.5/ 3/  15.
   CO  SAMPLE METER/RANGE/PPM                     61.9/ 2/3123.
   CO  BCKGRD METER/RANGE/PPM                       .1/ 2/   4.
   CO2 SAMPLE METER/RANGE/PCT                     17.8/ 3/  .28
   CO2 BCKGRD METER/RANGE/PCT                      3.2/ 3/  .05
   NOX SAMPLE METER/RANGE/PPM                      2.9/ 2/   3.
   NOX BCKGRD METER/RANGE/PPM                      1.3/ 2/   1.
   DILUTION FACTOR                                    21.99
   THC CONCENTRATION PPM                              197.
   CO  CONCENTRATION PPM                             3035.
   CO2 CONCENTRATION PCT                               .24
   NOX CONCENTRATION PPM                              1.7
   THC MASS GRAMS                                     5.07
   CO  MASS GRAMS                                   158.07
   CO2 MASS GRAMS                                    194.7
   NOX MASS GRAMS                                      .15
   RUN TIME               SECONDS                    300.
        DFC, WET (DRY)                            .955 ( .934)
        SCF, WET (DRY)                           1.000 ( .976)
        VOL (SCM)                                    44.7
        SAM BLR (SCM)                                0.00


   TEST NUMBER,                                     946
   BAROMETER,            MM HG                       743.0
   HUMIDITY,             G/KG                         13.1
   TEMPERATURE,          DEG C                        24.4
   CARBON DIOXIDE,        G/MIN                       38.9
   FUEL CONSUMPTION,      L/100MIN                    3.92

   HYDROCARBONS, (THC)   G/MIN                        1.01
   CARBON MONOXIDE,      G/MIN                       31.62
   OXIDES OF NITROGEN,   G/MIN                         .03

                                               H IDLE- VEHICLE EMISSIONS RSUDTS -RABBIT MALFUNCTION
                                                    PROJECT 05-6619-004

TEST NO.   946      RUN   1                        VEHICLE NO.94                      TEST WEIGHT  1134. KG( 2500. LBS)
VEHICLE MODEL   81 VW RAGBIT                       DATE    7/23/82                    ACTUAL ROAD LOAD   5.7 KW(  7.7 HP)
ENGINE 1.7 L(105. CID) L-4                         BAG CART NO.  1                    GASOLINE  EM-518-F
TRANSMISSION A3                                    DYNO NO.      3                    ODOMETER 16222. KM(10080. MILES)
                                                   CVS NO.   2

BAROMETER 742.95 MM HG(29.25 IN HG)                DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
RELATIVE HUMIDITY  66. PCT                         ABS. HUMIDITY 12.6 GM/KG           NOX HUMIDITY CORRECTION FACTOR  1.07
BAG RESULTS
   TEST CYCLE                                         H IDLE

   BLOWER DIF P MM. H2O(IN. H2O)                  774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)                774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)     [illegible]2.2 (108.0)
   BLOWER REVOLUTIONS                                23990.
   TOT FLOW STD. CU. METRES(SCF)                   44.7 ( 1579.)
   THC SAMPLE METER/RANGE/PPM                     15.1/ 3/ 151.
   THC BCKGRD METER/RANGE/PPM                      1.6/ 3/  16.
   CO  SAMPLE METER/RANGE/PPM                     95.2/ 3/2740.
   CO  BCKGRD METER/RANGE/PPM                       .7/ 3/  16.
   CO2 SAMPLE METER/RANGE/PCT                     13.3/ 3/  .21
   CO2 BCKGRD METER/RANGE/PCT                      2.9/ 3/  .04
   NOX SAMPLE METER/RANGE/PPM                      1.8/ 2/   2.
   NOX BCKGRD METER/RANGE/PPM                      1.1/ 2/   1.
   DILUTION FACTOR                                    27.24
   THC CONCENTRATION PPM                              136.
   CO  CONCENTRATION PPM                             2655.
   CO2 CONCENTRATION PCT                               .17
   NOX CONCENTRATION PPM                               .7
   THC MASS GRAMS                                     3.50
   CO  MASS GRAMS                                   138.23
   CO2 MASS GRAMS                                    136.8
   NOX MASS GRAMS                                      .07
   RUN TIME               SECONDS                    300.
        DFC, WET (DRY)                            .963 ( .943)
        SCF, WET (DRY)                           1.000 ( .977)
        VOL (SCM)                                    44.7
        SAM BLR (SCM)                                0.00


   TEST NUMBER,                                     946
   BAROMETER,            MM HG                       743.0
   HUMIDITY,             G/KG                         12.6
   TEMPERATURE,          DEG C                        23.9
   CARBON DIOXIDE,        G/MIN                       27.4
   FUEL CONSUMPTION,      L/100 MIN                   3.12

   HYDROCARBONS, (THC)   G/MIN                         .70
   CARBON MONOXIDE,      G/MIN                       27.65
   OXIDES OF NITROGEN,   G/MIN                         .01
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TABLE D-14 (Cont'd). TEST NO. 946 EMISSION RESULTS

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                                            C NYCC- VEHICLE EMISSIONS RESULTS -RABBIT MALFUNCTION
                                                    PROJECT 05-6619-004

TEST NO.   946      RUN                       VEHICLE NO.94                            TEST WEIGHT  1134. KG( 2500. LBS)
VEHICLE MODEL   81 VW RABBIT                  DATE     7/23/82                         ACTUAL ROAD LOAD   5.7 KW(  7.7 HP)
ENGINE 1.7 L(105. CID) L-4                    BAG CART NO.  1                          GASOLINE  EM-518-F
TRANSMISSION A3                               DYNO NO.      3                          ODOMETER 16233. KM(10087. MILES)
                                              CVS NO.   2

BAROMETER 741.17 MM HG(29.18 IN HG)           DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
RELATIVE HUMIDITY  55. PCT                    ABS. HUMIDITY 10.5 GM/KG                 NOX HUMIDITY CORRECTION FACTOR   .99
BAG RESULTS
   TEST CYCLE                                    C NYCC

   BLOWER DIF P MM. H2O(IN. H2O)             787.4 (31.0)
   BLOWER INLET P MM. H2O(IN. H2O)           774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)          42.8 (109.0)
   BLOWER REVOLUTIONS                           57874.
   TOT FLOW STD. CU. METRES(SCF)             107.4 ( 3793.)
   THC SAMPLE METER/RANGE/PPM                18.7/ 3/ 187.
   THC BCKGRD METER/RANGE/PPM                 1.3/ 3/  13.
   CO  SAMPLE METER/RANGE/PPM                59.4/ 2/2953.
   CO  BCKGRD METER/RANGE/PPM                  .2/ 2/   7.
   CO2 SAMPLE METER/RANGE/PCT                17.7/ 3/  .28
   CO2 BCKGRD METER/RANGE/PCT                 2.8/ 3/  .04
   NOX SAMPLE METER/RANGE/PPM                 6.3/ 2/   6.
   NOX BCKGRD METER/RANGE/PPM                 1.3/ 2/   1.
   DILUTION FACTOR                               22.71
   THC CONCENTRATION PPM                         175.
   CO  CONCENTRATION PPM                        2878.
   CO2 CONCENTRATION PCT                          .24
   NOX CONCENTRATION PPM                          5.1
   THC MASS GRAMS                               10.81
   CO  MASS GRAMS                              359.91
   CO2 MASS GRAMS                               475.7
   NOX MASS GRAMS                                1.03
   RUN TIME               SECONDS                722.
        DFC, WET (DRY)                       .956 ( .939)
        SCF, WET (DRY)                      1.000 ( .980)
        VOL (SCM)                               107.4
        SAM BLR (SCM)                            0.00
        KM  (MEASURED)                            .80

   TEST NUMBER,                               946
   BAROMETER,             MM HG                741.2
   HUMIDITY,              G/KG                  10.5
   TEMPERATURE,           DEG C                 23.9
   CARBON DIOXIDE,         G/KM                596.5     G/MIN      39.5
   FUEL CONSUMPTION,      L/100KM               57.57    L/100MIN    3.83

   HYDROCARBONS, (THC)    G/KM                  13.56    G/MIN       0.90
   CARBON MONOXIDE,       G/KM                449.89     G/MIN      29.91
   OXIDES OF NITROGEN,    G/KM                  1.29     G/MIN       0.09


                                            H NYCC- VEHICLE EMISSIONS RESULTS -RABBIT MALFUNCTION
                                                    PROJECT 05-6619-004

TEST NO.   946      RUN   1                   VEHICLE NO.94                            TEST WEIGHT  1134. KG( 2500. LBS)
VEHICLE MODEL   81 VW RABBIT                  DATE     7/23/82                         ACTUAL ROAD LOAD   5.7 KW(  7.7 HP)
ENGINE 1.7 L(105. CID) L-4                    BAG CART NO.  1                          GASOLINE  EM-518-F
TRANSMISSION A3                               DYNO NO.      3                          ODOMETER 16227. KM(10083. MILES)
                                              CVS NO.   2

BAROMETER 742.95 MM HG(29.25 IN HG)           DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
RELATIVE HUMIDITY  78. PCT                    ABS. HUMIDITY 15.0 GM/KG                 NOX HUMIDITY CORRECTION FACTOR  1.16
BAG RESULTS
   TEST CYCLE                                    H NYCC

   BLOWER DIF P MM. H2O(IN. H2O)             774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)           774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)          42.8 (109.0)
   BLOWER REVOLUTIONS                           57774.
   TOT FLOW STD. CU. METRES(SCF)             107.6 ( 3798.)
   THC SAMPLE METER/RANGE/PPM                18.8/ 3/ 188.
   THC BCKGRD METER/RANGE/PPM                 1.6/ 3/  16.
   CO  SAMPLE METER/RANGE/PPM                98.9/ 3/2895.
   CO  BCKGRD METER/RANGE/PPM                  .5/ 3/  11.
   CO2 SAMPLE METER/RANGE/PCT                15.2/ 3/  .24
   CO2 BCKGRD METER/RANGE/PCT                 2.6/ 3/  .04
   NOX SAMPLE METER/RANGE/PPM                 3.6/ 2/   4.
   NOX BCKGRD METER/RANGE/PPM                 1.1/ 2/   1.
   DILUTION FACTOR                               24.78
   THC CONCENTRATION PPM                         173.
   CO  CONCENTRATION PPM                        2798.
   CO2 CONCENTRATION PCT                          .20
   NOX CONCENTRATION PPM                          2.5
   THC MASS GRAMS                               10.71
   CO  MASS GRAMS                              350.37
   CO2 MASS GRAMS                               399.8
   NOX MASS GRAMS                                 .61
   RUN TIME               SECONDS                722.
        DFC, WET (DRY)                       .960 ( .935)
        SCF, WET (DRY)                      1.000 ( .973)
        VOL (SCM)                               107.6
        SAM BLR (SCM)                            0.00
        KM  (MEASURED)                            .80

   TEST NUMBER,                               946
   BAROMETER,             MM HG                743.0
   HUMIDITY,              G/KG                  15.0
   TEMPERATURE,           DEG C                 23.9
   CARBON DIOXIDE,         G/KM                497.9     G/MIN      33.2
   FUEL CONSUMPTION,      L/100KM               52.32    L/100MIN    3.48

   HYDROCARBONS, (THC)    G/KM                  13.34    G/MIN       0.89
   CARBON MONOXIDE,       G/KM                437.96     G/MIN      29.12
   OXIDES OF NITROGEN,    G/KM                    .76    G/MIN       0.05
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TABLE D-15. TEST NO. 947 EMISSION RESULTS

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                                          C IDLE- VEHICLE EMISSIONS RESULTS -RABBIT MALFUNCTION
                                                  PROJECT 05-6619-004

TEST NO.   947      RUN                         VEHICLE NO.94                  TEST WEIGHT  1134. KG( 2500. LBS)
VEHICLE MODEL   81 VW RABBIT                    DATE     7/26/82               ACTUAL ROAD LOAD   5.7 KW(  7.7 HP)
ENGINE 1.7 L(105. CID) L-4                      BAG CART NO.  1                GASOLINE  EM-518-F
TRANSMISSION A3                                 DYNO NO.      3                ODOMETER 16246. KM(10095. MILES)
                                                CVS NO.   2

BAROMETER 743.97 MM HG(29.29 IN HG)             DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)
RELATIVE HUMIDITY  67. PCT                      ABS. HUMIDITY 13.1 GM/KG       NOX HUMIDITY CORRECTION FACTOR  1.09
BAG RESULTS
   TEST CYCLE                                      C IDLE

   BLOWER DIF P MM. H2O(IN. H2O)                787.4 (31.0)
   BLOWER INLET P MM. H2O(IN. H2O)              787.4 (31.0)
   BLOWER INLET TEMP. DEG. C(DEG. F)             42.2 (108.0)
   BLOWER REVOLUTIONS                              24048.
   TOT FLOW STD. CU. METRES(SCF)                 44.8 ( 1582.)
   THC SAMPLE METER/RANGE/PPM                   21.7/ 3/ 217.
   THC BCKGRD METER/RANGE/PPM                    1.5/ 3/  15.
   CO  SAMPLE METER/RANGE/PPM                   62.1/ 2/3137.
   CO  BCKGRD METER/RANGE/PPM                     .5/ 2/  18.
   CO2 SAMPLE METER/RANGE/PCT                   17.2/ 3/  .27
   CO2 BCKGRD METER/RANGE/PCT                    2.7/ 3/  .04
   NOX SAMPLE METER/RANGE/PPM                    2.3/ 2/   2.
   NOX BCKGRD METER/RANGE/PPM                     .6/ 2/   1.
   DILUTION FACTOR                                  22.28
   THC CONCENTRATION PPM                            203.
   CO  CONCENTRATION PPM                           3036.
   CO2 CONCENTRATION PCT                             .24
   NOX CONCENTRATION PPM                             1.7
   THC MASS GRAMS                                   5.24
   CO  MASS GRAMS                                 158.40
   CO2 MASS GRAMS                                  192.8
   NOX MASS GRAMS                                    .16
   RUN TIME               SECONDS                   300.
       DFC, WET (DRY)                            .955 ( .935)
       SCF, WET (DRY)                           1.000 ( .976)
       VOL (SCM)                                    44.8
       SAM BLR (SCM)                                0.00

   TEST NUMBER,                                    947
   BAROMETER,            MM HG                      744.0
   HUMIDITY,             G/KG                        13.1
   TEMPERATURE,          DEG C                       24.4
   CARBON DIOXIDE,        G/ MIN                     38.6
   FUEL CONSUMPTION,      L/100MIN                   3.91

   HYDROCARBONS, (THC)    G/ MIN                     1.05
   CARBON MONOXIDE,       G/ MIN                    31.69
   OXIDES OF NITROGEN,    G/ MIN                      .03
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                                          H IDLE- VEHICLE EMISSIONS RESULTS -RABBIT MALFUNCTION
                                                  PROJECT 05-6619-004

TEST NO.   947      RUN                         VEHICLE NO.94                  TEST WEIGHT  1134. KG( 2500. LBS)
VEHICLE MODEL   81 VW RABBIT                    DATE     7/26/82               ACTUAL ROAD LOAD   5.7 KW(  7.7 HP)
ENGINE 1.7 L(105. CID) L-4                      BAG CART NO.  1                GASOLINE  EM-518-F
TRANSMISSION A3                                 DYNO NO.      3                ODOMETER 16253. KM(10099. MILES)
                                                CVS NO.   2

BAROMETER 743.97 MM HG(29.29 IN HG)             DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)
RELATIVE HUMIDITY  67. PCT                      ABS. HUMIDITY 13.1 GM/KG       NOX HUMIDITY CORRECTION FACTOR  1.09
BAG RESULTS
   TEST CYCLE                                      H IDLE

   BLOWER DIF P MM. H2O(IN. H2O)                787.4 (31.0)
   BLOWER INLET P MM. H2O(IN. H2O)              787.4 (31.0)
   BLOWER INLET TEMP. DEG. C(DEG. F)             43.3 (110.0)
   BLOWER REVOLUTIONS                              24020.
   TOT FLOW STD. CU. METRES(SCF)                 44.7 ( 1577.)
   THC SAMPLE METER/RANGE/PPM                   16.0/ 3/ 160.
   THC BCKGRD METER/RANGE/PPM                    1.6/ 3/  16.
   CO  SAMPLE METER/RANGE/PPM                   56.6/ 2/2768.
   CO  BCKGRD METER/RANGE/PPM                     .6/ 2/  21.
   CO2 SAMPLE METER/RANGE/PCT                   13.3/ 3/  .21
   CO2 BCKGRD METER/RANGE/PCT                    2.9/ 3/  .04
   NOX SAMPLE METER/RANGE/PPM                    1.5/ 2/   2.
   NOX BCKGRD METER/RANGE/PPM                     .6/ 2/   1.
   DILUTION FACTOR                                  27.04
   THC CONCENTRATION PPM                            145.
   CO  CONCENTRATION PPM                           2678.
   CO2 CONCENTRATION PCT                             .17
   NOX CONCENTRATION PPM                              .9
   THC MASS GRAMS                                   3.72
   CO  MASS GRAMS                                 139.23
   CO2 MASS GRAMS                                  136.7
   NOX MASS GRAMS                                    .09
   RUN TIME               SECONDS                   300.
       DFC, WET (DRY)                            .963 ( .942)
       SCF, WET (DRY)                           1.000 ( .977)
       VOL (SCM)                                    44.7
       SAM BLR (SCM)                                0.00

   TEST NUMBER,                                    947
   BAROMETER,            MM HG                      744.0
   HUMIDITY,             G/KG                        13.1
   TEMPERATURE,          DEG C                       24.4
   CARBON DIOXIDE,        G/MIN                      27.3
   FUEL CONSUMPTION,      L/100 MIN                  3.14

   HYDROCARBONS, (THC)    G/MIN                       .74
   CARBON MONOXIDE,       G/MIN                     27.85
   OXIDES OF NITROGEN,    G/MIN                       .02
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TABLE D-15 (Cont'd). TEST NO. 947 EMISSION RESULTS

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                                          C NYCC- VEHICLE EMISSIONS RESULTS -RABBIT MALFUNCTION
                                                  PROJECT 05-6619-004

TEST NO.   947      RUN                      VEHICLE NO.94                      TEST WEIGHT  1134. KG( 2500. LBS)
VEHICLE MODEL   81 VW RABBIT                 DATE     7/26/82                   ACTUAL ROAD LOAD   5.7 KW(  7.7 HP)
ENGINE 1.7 L(105. CID) L-4                   BAG CART NO.  1                    GASOLINE  EM-518-F
TRANSMISSION A3                              DYNO NO.      3                    ODOMETER 16266. KM(10107. MILES)
                                             CVS NO.   2

BAROMETER 741.43 MM HG(29.19 IN HG)          DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)
RELATIVE HUMIDITY  51. PCT                   ABS. HUMIDITY  9.3 GM/KG           NOX HUMIDITY CORRECTION FACTOR   .96
BAG RESULTS
   TEST CYCLE                                      C NYCC

   BLOWER DIF P MM. H2O(IN. H2O)             782.3 (30.8)
   BLOWER INLET P MM. H2O(IN. H2O)           787.4 (31.0)
   BLOWER INLET TEMP. DEG. C(DEG. F)          42.2 (108.0)
   BLOWER REVOLUTIONS                           57729.
   TOT FLOW STD. CU. METRES(SCF)             107.2 ( 3784.)
   THC SAMPLE METER/RANGE/PPM                18.7/ 3/ 187.
   THC BCKGRD METER/RANGE/PPM                 1.3/ 3/  13.
   CO  SAMPLE METER/RANGE/PPM                61.0/ 2/3061.
   CO  BCKGRD METER/RANGE/PPM                  .5/ 2/  18.
   CO2 SAMPLE METER/RANGE/PCT                18.0/ 3/  .29
   CO2 BCKGRD METER/RANGE/PCT                 2.9/ 3/  .04
   NOX SAMPLE METER/RANGE/PPM                 5.7/ 2/   6.
   NOX BCKGRD METER/RANGE/PPM                 1.1/ 2/   1.
   DILUTION FACTOR                              22.11
   THC CONCENTRATION PPM                        175.
   CO  CONCENTRATION PPM                       2977.
   CO2 CONCENTRATION PCT                         .25
   NOX CONCENTRATION PPM                        4.6
   THC MASS GRAMS                               10.79
   CO  MASS GRAMS                              371.45
   CO2 MASS GRAMS                               481.7
   NOX MASS GRAMS                                 .91
   RUN TIME               SECONDS               722.
        DFC, WET (DRY)                       .955 ( .939)
        SCF, WET (DRY)                      1.000 ( .981)
        VOL (SCM)                              107.2
        SAM BLR (SCM)                           0.00
        KM  (MEASURED)                           .77

   TEST NUMBER,                                947
   BAROMETER,             MM HG                741.4
   HUMIDITY,              G/KG                   9.3
   TEMPERATURE,           DEG C                 23.3
   CARBON DIOXIDE,         G/KM                625.0     G/MIN        40.0
   FUEL CONSUMPTION,       L/100KM              60.90    L/100MIN      3.90

   HYDROCARBONS, (THC)     G/KM                 14.00    G/MIN         0.90
   CARBON MONOXIDE,        G/KM                482.40    G/MIN        30.87
   OXIDES OF NITROGEN,     G/KM                  1.18    G/MIN         0.08

                                          H NYCC- VEHICLE EMISSIONS RESULTS -RABBIT MALFUNCTION
                                                  PROJECT 05-6619-004

TEST NO.   947      RUN                      VEHICLE NO.94                      TEST WEIGHT  1134. KG( 2500. LBS)
VEHICLE MODEL   81 VW RABBIT                 DATE     7/26/82                   ACTUAL ROAD LOAD   5.7 KW(  7.7 HP)
ENGINE 1.7 L(105. CID) L-4                   BAG CART NO.  1                    GASOLINE  EM-518-F
TRANSMISSION A3                              DYNO NO.      3                    ODOMETER 16259. KM(10103. MILES)
                                             CVS NO.   2

BAROMETER 743.97 MM HG(29.29 IN HG)          DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)
RELATIVE HUMIDITY  67. PCT                   ABS. HUMIDITY 13.1 GM/KG           NOX HUMIDITY CORRECTION FACTOR  1.09
BAG RESULTS
   TEST CYCLE                                      H NYCC

   BLOWER DIF P MM. H2O(IN. H2O)             787.4 (31.0)
   BLOWER INLET P MM. H2O(IN. H2O)           787.4 (31.0)
   BLOWER INLET TEMP. DEG. C(DEG. F)          40.0 (104.0)
   BLOWER REVOLUTIONS                           57739.
   TOT FLOW STD. CU. METRES(SCF)             108.0 ( 3814.)
   THC SAMPLE METER/RANGE/PPM                19.8/ 3/ 198.
   THC BCKGRD METER/RANGE/PPM                 1.5/ 3/  15.
   CO  SAMPLE METER/RANGE/PPM                59.4/ 2/2953.
   CO  BCKGRD METER/RANGE/PPM                  .4/ 2/  14.
   CO2 SAMPLE METER/RANGE/PCT                15.5/ 3/  .25
   CO2 BCKGRD METER/RANGE/PCT                 2.9/ 3/  .04
   NOX SAMPLE METER/RANGE/PPM                 4.5/ 2/   5.
   NOX BCKGRD METER/RANGE/PPM                  .6/ 2/   1.
   DILUTION FACTOR                              24.21
   THC CONCENTRATION PPM                        184.
   CO  CONCENTRATION PPM                       2862.
   CO2 CONCENTRATION PCT                         .20
   NOX CONCENTRATION PPM                        3.9
   THC MASS GRAMS                               11.44
   CO  MASS GRAMS                              359.94
   CO2 MASS GRAMS                               402.6
   NOX MASS GRAMS                                 .88
   RUN TIME               SECONDS               722.
        DFC, WET (DRY)                       .959 ( .938)
        SCF, WET (DRY)                      1.000 ( .976)
        VOL (SCM)                              108.0
        SAM BLR (SCM)                           0.00
        KM  (MEASURED)                           .81

   TEST NUMBER,                                947
   BAROMETER,             MM HG                744.0
   HUMIDITY,              G/KG                  13.1
   TEMPERATURE,           DEG C                 24.4
   CARBON DIOXIDE,         G/KM                495.5     G/MIN        33.5
   FUEL CONSUMPTION,       L/100KM              52.76    L/100MIN      3.55

   HYDROCARBONS, (THC)     G/KM                 14.07    G/MIN         0.95
   CARBON MONOXIDE,        G/KM                444.37    G/MIN        29.91
   OXIDES OF NITROGEN,     G/KM                  1.08    G/MIN         0.07
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TABLE D-16. TEST NO. 948 EMISSION RESULTS

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                                            C IDLE- VEHICLE EMISSIONS RESULTS -RABBIT MALFUNCTION
                                                   PROJECT 05-6619-004

TEST NO.   948      RUN                          VEHICLE NO.94                       TEST WEIGHT  1134. KG( 2500. LBS)
VEHICLE MODEL   81 VW RABBIT                     DATE    7/27/82                     ACTUAL ROAD LOAD   5.7 KW(  7.7 HP)
ENGINE 1.7 L(105. CID) L-4                       BAG CART NO.  1                     GASOLINE  EM-518-F
TRANSMISSION A3                                  DYNO NO.      3                     ODOMETER 16279. KM(10115. MILES)
                                                 CVS NO.   2

BAROMETER 743.97 MM HG(29.29 IN HG)              DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
RELATIVE HUMIDITY  62. PCT                       ABS. HUMIDITY 11.9 GM/KG            NOX HUMIDITY CORRECTION FACTOR  1.04
BAG RESULTS
   TEST CYCLE                                       C IDLE

   BLOWER DIF P MM. H2O(IN. H2O)                 774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)               774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)              42.8 (109.0)
   BLOWER REVOLUTIONS                               24012.
   TOT FLOW STD. CU. METRES(SCF)                  44.8 ( 1581.)
   THC SAMPLE METER/RANGE/PPM                    20.2/ 3/ 202.
   THC BCKGRD METER/RANGE/PPM                     1.1/ 3/  11.
   CO  SAMPLE METER/RANGE/PPM                    61.6/ 2/3102.
   CO  BCKGRD METER/RANGE/PPM                      .1/ 2/   4.
   CO2 SAMPLE METER/RANGE/PCT                    18.6/ 3/  .30
   CO2 BCKGRD METER/RANGE/PCT                     2.8/ 3/  .04
   NOX SAMPLE METER/RANGE/PPM                     3.1/ 2/   3.
   NOX BCKGRD METER/RANGE/PPM                      .8/ 2/   1.
   DILUTION FACTOR                                  21.60
   THC CONCENTRATION PPM                            192.
   CO  CONCENTRATION PPM                           3019.
   CO2 CONCENTRATION PCT                              .26
   NOX CONCENTRATION PPM                             2.3
   THC MASS GRAMS                                    4.95
   CO  MASS GRAMS                                  157.38
   CO2 MASS GRAMS                                  210.8
   NOX MASS GRAMS                                     .21
   RUN TIME                  SECONDS               299.
        DFC, WET (DRY)                           .954 ( .934)
        SCF, WET (DRY)                          1.000 ( .977)
        VOL (SCM)                                   44.8
        SAM BLR (SCM)                               0.00

   TEST NUMBER,                                    948
   BAROMETER,              MM HG                   744.0
   HUMIDITY,               G/KG                     11.9
   TEMPERATURE,            DEG C                    23.9
   CARBON DIOXIDE,          G/MIN                   42.3
   FUEL CONSUMPTION,       L/100MIN                  4.06

   HYDROCARBONS, (THC)      G/MIN                    .99
   CARBON MONOXIDE,         G/MIN                  31.58
   OXIDES OF NITROGEN,      G/MIN                    .04

                                            H IDLE- VEHICLE EMISSIONS RESULTS -RABBIT MALFUNCTION
                                                   PROJECT 05-6619-004

TEST NO.   948      RUN                          VEHICLE NO.94                       TEST WEIGHT  1134. KG( 2500. LBS)
VEHICLE MODEL   81 VW RABBIT                     DATE    7/27/82                     ACTUAL ROAD LOAD   5.7 KW(  7.7 HP)
ENGINE 1.7 L(105. CID) L-4                       BAG CART NO.  1                     GASOLINE  EM-518-F
TRANSMISSION A3                                  DYNO NO.      3                     ODOMETER 16283. KM(10118. MILES)
                                                 CVS NO.   2

BAROMETER 743.97 MM HG(29.29 IN HG)              DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
RELATIVE HUMIDITY  62. PCT                       ABS. HUMIDITY 11.9 GM/KG            NOX HUMIDITY CORRECTION FACTOR  1.04
BAG RESULTS
   TEST CYCLE                                       H IDLE

   BLOWER DIF P MM. H2O(IN. H2O)                 774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)               774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)              42.2 (108.0)
   BLOWER REVOLUTIONS                               24019.
   TOT FLOW STD. CU. METRES(SCF)                  44.8 ( 1583.)
   THC SAMPLE METER/RANGE/PPM                    17.3/ 3/ 173.
   THC BCKGRD METER/RANGE/PPM                     1.2/ 3/  12.
   CO  SAMPLE METER/RANGE/PPM                    58.5/ 2/2893.
   CO  BCKGRD METER/RANGE/PPM                      .1/ 2/   4.
   CO2 SAMPLE METER/RANGE/PCT                    13.1/ 3/  .21
   CO2 BCKGRD METER/RANGE/PCT                     2.8/ 3/  .04
   NOX SAMPLE METER/RANGE/PPM                     1.8/ 2/   2.
   NOX BCKGRD METER/RANGE/PPM                      .9/ 2/   1.
   DILUTION FACTOR                                  26.47
   THC CONCENTRATION PPM                            161.
   CO  CONCENTRATION PPM                           2820.
   CO2 CONCENTRATION PCT                              .17
   NOX CONCENTRATION PPM                              .9
   THC MASS GRAMS                                    4.17
   CO  MASS GRAMS                                  147.19
   CO2 MASS GRAMS                                  135.8
   NOX MASS GRAMS                                     .08
   RUN TIME                  SECONDS               300.
        DFC, WET (DRY)                           .962 ( .943)
        SCF, WET (DRY)                          1.000 ( .978)
        VOL (SCM)                                   44.8
        SAM BLR (SCM)                               0.00
        KM  (MEASURED)                              5.00

   TEST NUMBER,                                    948
   BAROMETER,              MM HG                   744.0
   HUMIDITY,               G/KG                     11.9
   TEMPERATURE,            DEG C                    23.9
   CARBON DIOXIDE,          G/MIN                   27.2
   FUEL CONSUMPTION,       L/100 MIN                 3.25

   HYDROCARBONS, (THC)      G/MIN                    .83
   CARBON MONOXIDE,         G/MIN                  29.44
   OXIDES OF NITROGEN,      G/MIN                    .02
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TABLE D-16 (Cont'd). TEST NO. 948 EMISSION RESULTS

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                                                  C NYCC- VEHICLE EMISSIONS RESULTS -RABBIT MALFUNCTION
                                                       PROJECT 05-6619-004

TEST NO.   948      RUN                                  VEHICLE NO.94                        TEST WEIGHT  1134. KG( 2500. LBS)
VEHICLE MODEL   81 VW RABBIT                             DATE     7/27/82                     ACTUAL ROAD LOAD   5.7 KW(  7.7 HP)
ENGINE 1.7 L(105. CID) L-4                               BAG CART NO.  1                      GASOLINE  EM-518-F
TRANSMISSION A3                                          DYNO NO.       3                     ODOMETER 16296. KM(10126. MILES)
                                                         CVS NO.   2

BAROMETER 742.19 MM HG(29.22 IN HG)                      DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
RELATIVE HUMIDITY  55. PCT                               ABS. HUMIDITY 10.4 GM/KG             NOX HUMIDITY CORRECTION FACTOR   .99
BAG RESULTS
   TEST CYCLE                                              C NYCC

   BLOWER DIF P MM. H2O(IN. H2O)                         774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)                       774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)                      42.2 (108.0)
   BLOWER REVOLUTIONS                                       57854.
   TOT FLOW STD. CU. METRES(SCF)                         107.7 ( 3803.)
   THC SAMPLE METER/RANGE/PPM                            19.4/ 3/ 194.
   THC BCKGRD METER/RANGE/PPM                             1.2/ 3/  12.
   CO  SAMPLE METER/RANGE/PPM                            60.4/ 2/3020.
   CO  BCKGRD METER/RANGE/PPM                              .2/ 2/   7.
   CO2 SAMPLE METER/RANGE/PCT                            17.9/ 3/  .29
   CO2 BCKGRD METER/RANGE/PCT                             2.8/ 3/  .04
   NOX SAMPLE METER/RANGE/PPM                             6.5/ 2/   7.
   NOX BCKGRD METER/RANGE/PPM                              .9/ 2/   1.
   DILUTION FACTOR                                          22.31
   THC CONCENTRATION PPM                                    183.
   CO  CONCENTRATION PPM                                   2943.
   CO2 CONCENTRATION PCT                                     .25
   NOX CONCENTRATION PPM                                     5.6
   THC MASS GRAMS                                          11.34
   CO  MASS GRAMS                                         369.09
   CO2 MASS GRAMS                                          483.7
   NOX MASS GRAMS                                           1.15
   RUN TIME              SECONDS                           722.
        DFC, WET (DRY)                                   .955 ( .938)
        SCF, WET (DRY)                                  1.000 ( .980)
        VOL (SCM)                                          107.7
        SAM BLR (SCM)                                       0.00
        KM  (MEASURED)                                       .80

   TEST NUMBER,                                           948
   BAROMETER,            MM HG                             742.2
   HUMIDITY,             G/KG                               10.4
   TEMPERATURE,          DEG C                              23.9
   CARBON DIOXIDE,        G/KM                             607.0    G/MIN       40.2
   FUEL CONSUMPTION,      L/100KM                          58.90    L/100MIN    3.92

   HYDROCARBONS, (THC)   G/KM                              14.23    G/MIN       0.94
   CARBON MONOXIDE,      G/KM                             461.36    G/MIN      30.67
   OXIDES OF NITROGEN,   G/KM                               1.45    G/MIN       0.10
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                                                  H NYCC- VEHICLE EMISSIONS RESULTS -RABBIT MALFUNCTION
                                                       PROJECT 05-6619-004

TEST NO.   948      RUN                                  VEHICLE NO.94                        TEST WEIGHT  1134. KG( 2500. LBS)
VEHICLE MODEL   81 VW RABBIT                             DATE     7/27/82                     ACTUAL ROAD LOAD   5.7 KW(  7.7 HP)
ENGINE 1.7 L(105. CID) L-4                               BAG CART NO.  1                      GASOLINE  EM-518-F
TRANSMISSION A3                                          DYNO NO.       3                     ODOMETER 16290. KM(10122. MILES)
                                                         CVS NO.   2

BAROMETER 743.97 MM HG(29.29 IN HG)                      DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
RELATIVE HUMIDITY  62. PCT                               ABS. HUMIDITY 11.9 GM/KG             NOX HUMIDITY CORRECTION FACTOR  1.04
BAG RESULTS
   TEST CYCLE                                              H NYCC

   BLOWER DIF P MM. H2O(IN. H2O)                         774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)                       774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)                      37.8 (100.0)
   BLOWER REVOLUTIONS                                       57756.
   TOT FLOW STD. CU. METRES(SCF)                         108.7 ( 3840.)
   THC SAMPLE METER/RANGE/PPM                            20.2/ 3/ 202.
   THC BCKGRD METER/RANGE/PPM                             1.1/ 3/  11.
   CO  SAMPLE METER/RANGE/PPM                            59.5/ 2/2960.
   CO  BCKGRD METER/RANGE/PPM                              .3/ 2/  11.
   CO2 SAMPLE METER/RANGE/PCT                            15.2/ 3/  .24
   CO2 BCKGRD METER/RANGE/PCT                             2.3/ 3/  .04
   NOX SAMPLE METER/RANGE/PPM                             4.6/ 2/   5.
   NOX BCKGRD METER/RANGE/PPM                             1.2/ 2/   1.
   DILUTION FACTOR                                          24.36
   THC CONCENTRATION PPM                                    191.
   CO  CONCENTRATION PPM                                   2876.
   CO2 CONCENTRATION PCT                                     .21
   NOX CONCENTRATION PPM                                     3.4
   THC MASS GRAMS                                          12.00
   CO  MASS GRAMS                                         364.11
   CO2 MASS GRAMS                                          413.0
   NOX MASS GRAMS                                            .75
   RUN TIME              SECONDS                           722.
        DFC, WET (DRY)                                   .959 ( .940)
        SCF, WET (DRY)                                  1.000 ( .978)
        VOL (SCM)                                          108.7
        SAM BLR (SCM)                                       0.00
        KM  (MEASURED)                                       .83

   TEST NUMBER,                                           948
   BAROMETER,            MM HG                             744.0
   HUMIDITY,             G/KG                               11.9
   TEMPERATURE,          DEG C                              23.9
   CARBON DIOXIDE,        G/KM                             500.2            G/MIN       34.3
   FUEL CONSUMPTION,      L/100KM                          52.90            L/100MIN    3.65

   HYDROCARBONS, (THC)   G/KM                              14.54            G/MIN       1.00
   CARBON MONOXIDE,      G/KM                             438.69            G/MIN      30.26
   OXIDES OF NITROGEN,   G/KM                                .90            G/MIN       0.06
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TABLE D-17. TEST NO. 951 EMISSION RESULTS

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                                    C IDLE- VEHICLE EMISSIONS RESULTS -BUICK BASE LINE
                                                PROJECT 05-6619-004

TEST NO.   951      RUN   2                  VEHICLE NO.95                      TEST WEIGHT  1644. KG( 3625. LBS)
VEHICLE MODEL  80 BUICK CENTURY              DATE    8/12/82                    ACTUAL ROAD LOAD   8.4 KW( 11.3 HP)
ENGINE 3.8 L(231. CID) V-6                   BAG CART NO.  1                    GASOLINE  EM-518-F
TRANSMISSION A3                              DYNO NO.       3                   ODOMETER 50207. KM(31197. MILES)
                                             CVS NO.   2

BAROMETER 744.47 MM HG(29.31 IN HG)          DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)
RELATIVE HUMIDITY  66. PCT                   ABS. HUMIDITY 12.1 GM/KG           NOX HUMIDITY CORRECTION FACTOR  1.05
BAG RESULTS
  TEST CYCLE                                     C IDLE

  BLOWER DIF P MM. H2O(IN. H2O)              774.7 (30.5)
  BLOWER INLET P MM. H2O(IN. H2O)            774.7 (30.5)
  BLOWER INLET TEMP. DEG. C(DEG. F)           43.3 (110.0)
  BLOWER REVOLUTIONS                            24028.
  TOT FLOW STD. CU. METRES(SCF)               44.8 ( 1582.)
  THC SAMPLE METER/RANGE/PPM                 26.3/ 3/ 263.
  THC BCKGRD METER/RANGE/PPM                  1.4/ 3/  14.
  CO  SAMPLE METER/RANGE/PPM                 65.5/11/ 267.
  CO  BCKGRD METER/RANGE/PPM                   .7/11/   2.
  CO2 SAMPLE METER/RANGE/PCT                 56.0/ 3/  .98
  CO2 BCKGRD METER/RANGE/PCT                  2.9/ 3/  .04
  NOX SAMPLE METER/RANGE/PPM                 60.9/ 1/  18.
  NOX BCKGRD METER/RANGE/PPM                  3.7/ 1/   1.
  DILUTION FACTOR                                12.94
  THC CONCENTRATION PPM                          250.
  CO  CONCENTRATION PPM                          255.
  CO2 CONCENTRATION PCT                           .94
  NOX CONCENTRATION PPM                          17.1
  THC MASS GRAMS                                  6.46
  CO  MASS GRAMS                                 13.29
  CO2 MASS GRAMS                                 773.5
  NOX MASS GRAMS                                  1.53
  RUN TIME                SECONDS                300.
      DFC, WET (DRY)                          .923 ( .903)
      SCF, WET (DRY)                         1.000 ( .970)
      VOL (SCM)                                   44.8
      SAM BLR (SCM)                               0.00


  TEST NUMBER,                                 951
  BAROMETER,              MM HG                 744.5
  HUMIDITY,               G/KG                   12.1
  TEMPERATURE,            DEG C                  23.3
  CARBON DIOXIDE,          G/min                154.7
  FUEL CONSUMPTION,        L/100min               6.96

  HYDROCARBONS, (THC)     G/min                  1.29
  CARBON MONOXIDE,        G/min                  2.66
  OXIDES OF NITROGEN,     G/min                   .31
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                                    H IDLE- VEHICLE EMISSIONS RESULTS -BUICK BASELINE
                                                PROJECT 05-6619-004

TEST NO.   951      RUN   2                  VEHICLE NO.95                      TEST WEIGHT  1644. KG( 3625. LBS)
VEHICLE MODEL  80 BUICK CENTURY              DATE    8/12/82                    ACTUAL ROAD LOAD   8.4 KW( 11.3 HP)
ENGINE 3.8 L(231. CID) V-6                   BAG CART NO.  1                    GASOLINE  EM-518-F
TRANSMISSION A3                              DYNO NO.       3                   ODOMETER 50213. KM(31201. MILES)
                                             CVS NO.   2

BAROMETER 744.47 MM HG(29.31 IN HG)          DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)
RELATIVE HUMIDITY  63. PCT                   ABS. HUMIDITY 12.3 GM/KG           NOX HUMIDITY CORRECTION FACTOR  1.06
BAG RESULTS
  TEST CYCLE                                     H IDLE

  BLOWER DIF P MM. H2O(IN. H2O)              774.7 (30.5)
  BLOWER INLET P MM. H2O(IN. H2O)            774.7 (30.5)
  BLOWER INLET TEMP. DEG. C(DEG. F)           42.8 (109.0)
  BLOWER REVOLUTIONS                            24038.
  TOT FLOW STD. CU. METRES(SCF)               44.9 ( 1584.)
  THC SAMPLE METER/RANGE/PPM                 75.0/ 2/  75.
  THC BCKGRD METER/RANGE/PPM                 14.9/ 2/  15.
  CO  SAMPLE METER/RANGE/PPM                  5.2/13/   5.
  CO  BCKGRD METER/RANGE/PPM                  2.5/13/   2.
  CO2 SAMPLE METER/RANGE/PCT                 23.1/ 3/  .37
  CO2 BCKGRD METER/RANGE/PCT                  3.3/ 3/  .05
  NOX SAMPLE METER/RANGE/PPM                  6.0/ 1/   2.
  NOX BCKGRD METER/RANGE/PPM                  3.4/ 1/   1.
  DILUTION FACTOR                                35.02
  THC CONCENTRATION PPM                          61.
  CO  CONCENTRATION PPM                           2.
  CO2 CONCENTRATION PCT                           .33
  NOX CONCENTRATION PPM                           .8
  THC MASS GRAMS                                  1.57
  CO  MASS GRAMS                                  .13
  CO2 MASS GRAMS                                 267.4
  NOX MASS GRAMS                                  .07
  RUN TIME                SECONDS                300.
      DFC, WET (DRY)                          .971 ( .952)
      SCF, WET (DRY)                         1.000 ( .976)
      VOL (SCM)                                   44.9
      SAM BLR (SCM)                               0.00


  TEST NUMBER,                                 951
  BAROMETER,              MM HG                 744.5
  HUMIDITY,               G/KG                   12.3
  TEMPERATURE,            DEG C                  24.4
  CARBON DIOXIDE,          G/min                 53.5
  FUEL CONSUMPTION,        L/100 min              2.33

  HYDROCARBONS, (THC)     G/min                   .31
  CARBON MONOXIDE,        G/min                   .03
  OXIDES OF NITROGEN,     G/min                   .01
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TABLE D-17 (Cont'd). TEST NO. 951 EMISSION RESULTS

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                                                CNYCC - VEHICLE EMISSIONS RESULTS -BUICK BASE LINE
                                                        PROJECT 05-6619-004

TEST NO.   951      RUN   2                        VEHICLE NO.95                         TEST WEIGHT  1644. KG( 3625. LBS)
VEHICLE MODEL  80 BUICK CENTURY                    DATE     8/12/82                      ACTUAL ROAD LOAD   8.4 KW( 11.3 HP)
ENGINE 3.8 L(231. CID) V-6                         BAG CART NO.  1                       GASOLINE  EM-518-F
TRANSMISSION A3                                    DYNO NO.      3                       ODOMETER 50224. KM(31208. MILES)
                                                   CVS NO.   2

BAROMETER 741.68 MM HG(29.20 IN HG)                DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
RELATIVE HUMIDITY  51. PCT                         ABS. HUMIDITY  9.8 GM/KG              NOX HUMIDITY CORRECTION FACTOR   .97
BAG RESULTS
   TEST CYCLE                                         CNYCC

   BLOWER DIF P MM. H2O(IN. H2O)                   774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)                 774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)                39.4 (103.0)
   BLOWER REVOLUTIONS                                 57806.
   TOT FLOW STD. CU. METRES(SCF)                   108.1 ( 3817.)
   THC SAMPLE METER/RANGE/PPM                      80.2/ 3/ 802.
   THC BCKGRD METER/RANGE/PPM                       1.5/ 3/  15.
   CO  SAMPLE METER/RANGE/PPM                      60.1/12/ 132.
   CO  BCKGRD METER/RANGE/PPM                       1.6/12/   3.
   CO2 SAMPLE METER/RANGE/PCT                      28.4/ 3/  .47
   CO2 BCKGRD METER/RANGE/PCT                       2.9/ 3/  .04
   NOX SAMPLE METER/RANGE/PPM                      23.0/ 1/   7.
   NOX BCKGRD METER/RANGE/PPM                       3.1/ 1/   1.
   DILUTION FACTOR                                     23.92
   THC CONCENTRATION PPM                               788.
   CO  CONCENTRATION PPM                               126.
   CO2 CONCENTRATION PCT                                .42
   NOX CONCENTRATION PPM                               6.0
   THC MASS GRAMS                                      49.10
   CO  MASS GRAMS                                      15.81
   CO2 MASS GRAMS                                      840.7
   NOX MASS GRAMS                                       1.19
   RUN TIME                  SECONDS                   721.
         DFC, WET (DRY)                             .958 ( .942)
         SCF, WET (DRY)                            1.000 ( .979)
         VOL (SCM)                                     108.1
         SAM BLR (SCM)                                 0.00
         KM  (MEASURED)                                 .80

    TEST NUMBER,                                    951
    BAROMETER,              MM HG                     741.7
    HUMIDITY,               G/KG                        9.8
    TEMPERATURE,            DEG C                      23.9
    CARBON DIOXIDE,          G/KM                    1046.9   G/min      70.0
    FUEL CONSUMPTION,        L/100KM                   54.28  L/100min   3.61

    HYDROCARBONS, (THC)     G/KM                       61.14  G/min      4.09
    CARBON MONOXIDE,        G/KM                       19.69  G/min      1.32
    OXIDES OF NITROGEN,     G/KM                        1.49  G/min      0.10

                                                H NYCC- VEHICLE EMISSIONS RESULTS -BUICK BASE LINE
                                                        PROJECT 05-6619-004

TEST NO.   951      RUN   2                        VEHICLE NO.95                         TEST WEIGHT  1644. KG( 3625. LBS)
VEHICLE MODEL  80 BUICK CENTURY                    DATE     8/12/82                      ACTUAL ROAD LOAD   8.4 KW( 11.3 HP)
ENGINE 3.8 L(231. CID) V-6                         BAG CART NO.  1                       GASOLINE  EM-518-F
TRANSMISSION A3                                    DYNO NO.      3                       ODOMETER 50218. KM(31204. MILES)
                                                   CVS NO.   2

BAROMETER 744.47 MM HG(29.31 IN HG)                DRY BULB TEMP. 25.6 DEG C(78.0 DEG F)
RELATIVE HUMIDITY  53. PCT                         ABS. HUMIDITY 11.1 GM/KG              NOX HUMIDITY CORRECTION FACTOR  1.01
BAG RESULTS
   TEST CYCLE                                         H NYCC

   BLOWER DIF P MM. H2O(IN. H2O)                   774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)                 774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)                41.7 (107.0)
   BLOWER REVOLUTIONS                                 57760.
   TOT FLOW STD. CU. METRES(SCF)                   108.0 ( 3814.)
   THC SAMPLE METER/RANGE/PPM                      78.6/ 2/  79.
   THC BCKGRD METER/RANGE/PPM                      15.2/ 2/  15.
   CO  SAMPLE METER/RANGE/PPM                      27.0/13/  25.
   CO  BCKGRD METER/RANGE/PPM                       2.3/13/   2.
   CO2 SAMPLE METER/RANGE/PCT                      29.3/ 3/  .48
   CO2 BCKGRD METER/RANGE/PCT                       2.9/ 3/  .04
   NOX SAMPLE METER/RANGE/PPM                      13.6/ 1/   4.
   NOX BCKGRD METER/RANGE/PPM                       3.3/ 1/   1.
   DILUTION FACTOR                                     27.15
   THC CONCENTRATION PPM                               64.
   CO  CONCENTRATION PPM                               22.
   CO2 CONCENTRATION PCT                                .44
   NOX CONCENTRATION PPM                               3.1
   THC MASS GRAMS                                      3.98
   CO  MASS GRAMS                                      2.78
   CO2 MASS GRAMS                                      871.0
   NOX MASS GRAMS                                        .65
   RUN TIME                  SECONDS                   722.
         DFC, WET (DRY)                             .963 ( .947)
         SCF, WET (DRY)                            1.000 ( .978)
         VOL (SCM)                                     108.0
         SAM BLR (SCM)                                 0.00
         KM  (MEASURED)                                 .79

    TEST NUMBER,                                    951
    BAROMETER,              MM HG                     744.5
    HUMIDITY,               G/KG                       11.1
    TEMPERATURE,            DEG C                      25.6
    CARBON DIOXIDE,          G/KM                    1104.5   G/min      72.4
    FUEL CONSUMPTION,        L/100KM                   48.06  L/100min   3.16

    HYDROCARBONS, (THC)     G/KM                        5.05  G/min      0.33
    CARBON MONOXIDE,        G/KM                        3.53  G/min      0.23
    OXIDES OF NITROGEN,     G/KM                         .82  G/min      0.05
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TABLE D-18. TEST NO. 952 EMISSION RESULTS

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                                        C IDLE- VEHICLE EMISSIONS RESULTS -BUICK BASELINE
                                                PROJECT 05-6619-004

TEST NO.   952      RUN   1                  VEHICLE NO.95                    TEST WEIGHT  1644. KG( 3625. LBS)
VEHICLE MODEL  80 BUICK CENTURY              DATE    8/13/82                  ACTUAL ROAD LOAD   8.4 KW( 11.3 HP)
ENGINE 3.8 L(231. CID) V-6                   BAG CART NO.  1                  GASOLINE  EM-518-F
TRANSMISSION A3                              DYNO NO.      3                  ODOMETER 50234. KM(31214. MILES)
                                             CVS NO.   2

BAROMETER 742.70 MM HG(29.24 IN HG)          DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)
RELATIVE HUMIDITY  70. PCT                   ABS. HUMIDITY 12.9 GM/KG         NOX HUMIDITY CORRECTION FACTOR  1.08
BAG RESULTS
   TEST CYCLE                                   C IDLE

   BLOWER DIF P MM. H2O(IN. H2O)              774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)            774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)           43.3 (110.0)
   BLOWER REVOLUTIONS                            24044.
   TOT FLOW STD. CU. METRES(SCF)               44.7 ( 1579.)
   THC SAMPLE METER/RANGE/PPM                 32.4/ 3/ 324.
   THC BCKGRD METER/RANGE/PPM                  1.3/ 3/  13.
   CO  SAMPLE METER/RANGE/PPM                 61.3/12/ 135.
   CO  BCKGRD METER/RANGE/PPM                   .5/12/   1.
   CO2 SAMPLE METER/RANGE/PCT                 38.7/ 3/ .6536
   CO2 BCKGRD METER/RANGE/PCT                  2.7/ 3/ .0413
   NOX SAMPLE METER/RANGE/PPM                 45.9/ 1/ 13.6
   NOX BCKGRD METER/RANGE/PPM                  3.5/ 1/  1.0
   DILUTION FACTOR                                19.17
   THC CONCENTRATION PPM                          312.
   CO  CONCENTRATION PPM                          129.
   CO2 CONCENTRATION PCT                          .6145
   NOX CONCENTRATION PPM                          12.7
   THC MASS GRAMS                                  8.04
   CO  MASS GRAMS                                  6.74
   CO2 MASS GRAMS                                 503.0
   NOX MASS GRAMS                                  1.17
   RUN TIME                  SECONDS              300.
        DFC, WET (DRY)                         .948 ( .926)
        SCF, WET (DRY)                        1.000 ( .971)
        VOL (SCM)                                 44.7
        SAM BLR (SCM)                             0.00


   TEST NUMBER,                                 952
   BAROMETER,               MM HG                742.7
   HUMIDITY,                G/KG                  12.9
   TEMPERATURE,             DEG C                 23.3
   CARBON DIOXIDE,           G/ min              100.6
   FUEL CONSUMPTION,         L/100min              4.60

   HYDROCARBONS, (THC)       G/min                 1.61
   CARBON MONOXIDE,          G/min                 1.35
   OXIDES OF NITROGEN,       G/min                  .23
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                                        H IDLE- VEHICLE EMISSIONS RESULTS -BUICK BASELINE
                                                PROJECT 05-6619-004

TEST NO.   952      RUN   1                  VEHICLE NO.95
VEHICLE MODEL  80 BUICK CENTURY              DATE    8/13/82                  TEST WEIGHT  1644. KG( 3625. LBS)
ENGINE 3.8 L(231. CID) V-6                   BAG CART NO.  1                  ACTUAL ROAD LOAD   8.4 KW( 11.3 HP)
TRANSMISSION A3                              DYNO NO.      3                  GASOLINE  EM-518-F
                                             CVS NO.   2                      ODOMETER 50237. KM(31216. MILES)

BAROMETER 742.70 MM HG(29.24 IN HG)          DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)
RELATIVE HUMIDITY  70. PCT                   ABS. HUMIDITY 12.9 GM/KG         NOX HUMIDITY CORRECTION FACTOR  1.08
BAG RESULTS
   TEST CYCLE                                   H IDLE

   BLOWER DIF P MM. H2O(IN. H2O)              774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)            774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)           43.3 (110.0)
   BLOWER REVOLUTIONS                            23600.
   TOT FLOW STD. CU. METRES(SCF)               43.9 ( 1550.)
   THC SAMPLE METER/RANGE/PPM                 81.8/ 2/  82.
   THC BCKGRD METER/RANGE/PPM                 11.4/ 2/  11.
   CO  SAMPLE METER/RANGE/PPM                  3.6/13/   3.
   CO  BCKGRD METER/RANGE/PPM                  1.2/13/   1.
   CO2 SAMPLE METER/RANGE/PCT                 24.2/ 3/ .3937
   CO2 BCKGRD METER/RANGE/PCT                  2.6/ 3/ .0397
   NOX SAMPLE METER/RANGE/PPM                  7.2/ 1/  2.1
   NOX BCKGRD METER/RANGE/PPM                  3.3/ 1/  1.0
   DILUTION FACTOR                                33.32
   THC CONCENTRATION PPM                           71.
   CO  CONCENTRATION PPM                            2.
   CO2 CONCENTRATION PCT                          .3552
   NOX CONCENTRATION PPM                           1.2
   THC MASS GRAMS                                  1.79
   CO  MASS GRAMS                                   .11
   CO2 MASS GRAMS                                 285.3
   NOX MASS GRAMS                                   .11
   RUN TIME                  SECONDS              295.
        DFC, WET (DRY)                         .970 ( .948)
        SCF, WET (DRY)                        1.000 ( .974)
        VOL (SCM)                                 43.9
        SAM BLR (SCM)                             0.00
        KM  (MEASURED)                            5.00

   TEST NUMBER,                                 952
   BAROMETER,               MM HG                742.7
   HUMIDITY,                G/KG                  12.9
   TEMPERATURE,             DEG C                 23.3
   CARBON DIOXIDE,           G/min                58.0
   FUEL CONSUMPTION,         L/100min              2.53

   HYDROCARBONS, (THC)       G/min                  .36
   CARBON MONOXIDE,          G/min                  .02
   OXIDES OF NITROGEN,       G/min                  .02
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TABLE D-18 (Cont'd). TEST NO. 952 EMISSION RESULTS

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                                        C NYCC- VEHICLE EMISSIONS RESULTS -BUICK BASELINE
                                                PROJECT 05-6619-004

TEST NO.   952      RUN   1                     VEHICLE NO.95                          TEST WEIGHT  1644. KG( 3625. LBS)
VEHICLE MODEL  80  BUICK CENTURY                DATE    8/13/82                        ACTUAL ROAD LOAD   8.4 KW( 11.3 HP)
ENGINE 3.8 L(231. CID) V-6                      BAG CART NO.  1                        GASOLINE  EM-518-F
TRANSMISSION A3                                 DYNO NO.      3                        ODOMETER 50252. KM(31225. MILES)
                                                CVS NO.   2

BAROMETER 740.66 MM HG(29.16 IN HG)             DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)
RELATIVE HUMIDITY  51. PCT                      ABS. HUMIDITY  9.3 GM/KG               NOX HUMIDITY CORRECTION FACTOR   .96
BAG RESULTS
   TEST CYCLE                                      C NYCC

   BLOWER DIF P MM. H2O(IN. H2O)               774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)             774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)            42.8 (109.0)
   BLOWER REVOLUTIONS                             57865.
   TOT FLOW STD. CU. METRES(SCF)               107.4 ( 3792.)
   THC SAMPLE METER/RANGE/PPM                  74.7/ 3/ 747.
   THC BCKGRD METER/RANGE/PPM                   1.7/ 3/  17.
   CO  SAMPLE METER/RANGE/PPM                  59.7/12/ 131.
   CO  BCKGRD METER/RANGE/PPM                   2.8/12/   5.
   CO2 SAMPLE METER/RANGE/PCT                  29.9/ 3/ .4939
   CO2 BCKGRD METER/RANGE/PCT                   4.6/ 3/ .0707
   NOX SAMPLE METER/RANGE/PPM                  23.1/ 1/  6.9
   NOX BCKGRD METER/RANGE/PPM                   3.8/ 1/  1.1
   DILUTION FACTOR                                 23.05
   THC CONCENTRATION PPM                           731.
   CO  CONCENTRATION PPM                           122.
   CO2 CONCENTRATION PCT                           .4262
   NOX CONCENTRATION PPM                           5.8
   THC MASS GRAMS                                  45.25
   CO  MASS GRAMS                                  15.31
   CO2 MASS GRAMS                                  837.9
   NOX MASS GRAMS                                   1.14
   RUN TIME               SECONDS                  722.
        DFC, WET (DRY)                         .957 ( .941)
        SCF, WET (DRY)                        1.000 ( .979)
        VOL (SCM)                                 107.4
        SAM BLR (SCM)                             0.00
        KM  (MEASURED)                             .81

   TEST NUMBER,                                952
   BAROMETER,             MM HG                740.7
   HUMIDITY,              G/KG                   9.3
   TEMPERATURE,           DEG C                 23.3
   CARBON DIOXIDE,         G/KM               1029.4   G/min       69.6
   FUEL CONSUMPTION,       L/100KM              52.72  L/100km      3.55

   HYDROCARBONS, (THC)     G/KM                 55.58  G/min        3.76
   CARBON MONOXIDE,        G/KM                 18.81  G/min        1.27
   OXIDES OF NITROGEN,     G/KM                  1.40  G/min        0.09


                                        H NYCC- VEHICLE EMISSIONS RESULTS -BUICK BASELINE
                                                PROJECT 05-6619-004

TEST NO.   952      RUN   1                     VEHICLE NO.95                          TEST WEIGHT  1644. KG( 3625. LBS)
VEHICLE MODEL    80BUICK CENTURY                DATE    8/13/82                        ACTUAL ROAD LOAD   8.4 KW( 11.3 HP)
ENGINE 3.8 L(231. CID) V-6                      BAG CART NO.  1                        GASOLINE  EM-518-F
TRANSMISSION A3                                 DYNO NO.      3                        ODOMETER 50242. KM(31219. MILES)
                                                CVS NO.   2

BAROMETER 742.70 MM HG(29.24 IN HG)             DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)
RELATIVE HUMIDITY  66. PCT                      ABS. HUMIDITY 12.1 GM/KG               NOX HUMIDITY CORRECTION FACTOR  1.05
BAG RESULTS
   TEST CYCLE                                      H NYCC

   BLOWER DIF P MM. H2O(IN. H2O)               774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)             774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)            43.3 (110.0)
   BLOWER REVOLUTIONS                             57797.
   TOT FLOW STD. CU. METRES(SCF)               107.5 ( 3795.)
   THC SAMPLE METER/RANGE/PPM                  76.3/ 2/  76.
   THC BCKGRD METER/RANGE/PPM                  11.8/ 2/  12.
   CO  SAMPLE METER/RANGE/PPM                  29.7/13/  27.
   CO  BCKGRD METER/RANGE/PPM                   1.6/13/   1.
   CO2 SAMPLE METER/RANGE/PCT                  29.8/ 3/ .4921
   CO2 BCKGRD METER/RANGE/PCT                   2.4/ 3/ .0367
   NOX SAMPLE METER/RANGE/PPM                  14.0/ 1/  4.2
   NOX BCKGRD METER/RANGE/PPM                   3.4/ 1/  1.0
   DILUTION FACTOR                                 26.67
   THC CONCENTRATION PPM                           65.
   CO  CONCENTRATION PPM                           25.
   CO2 CONCENTRATION PCT                           .4568
   NOX CONCENTRATION PPM                           3.2
   THC MASS GRAMS                                  4.02
   CO  MASS GRAMS                                  3.14
   CO2 MASS GRAMS                                  898.8
   NOX MASS GRAMS                                   .69
   RUN TIME               SECONDS                  721.
        DFC, WET (DRY)                         .963 ( .942)
        SCF, WET (DRY)                        1.000 ( .974)
        VOL (SCM)                                 107.5
        SAM BLR (SCM)                             0.00
        KM  (MEASURED)                             .81

   TEST NUMBER,                                952
   BAROMETER,             MM HG                742.7
   HUMIDITY,              G/KG                  12.1
   TEMPERATURE,           DEG C                 23.3
   CARBON DIOXIDE,         G/KM               1107.9   G/min       74.8
   FUEL CONSUMPTION,       L/100KM              48.22  L/100min    3.25

   HYDROCARBONS, (THC)     G/KM                  4.96  G/min        0.33
   CARBON MONOXIDE,        G/KM                  3.87  G/min        0.26
   OXIDES OF NITROGEN,     G/KM                   .85  G/min        0.06
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TABLE D-19. TEST NO. 953 EMISSION RESULTS

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                                       C IDLE- VEHICLE EMISSIONS RESULTS -BUICK BASELINE
                                                PROJECT 05-6619-004

TEST NO.   953      RUN   1                 VEHICLE NO.95                   TEST WEIGHT  1644. KG( 3625. LBS)
VEHICLE MODEL   80 BUICK CENTURY            DATE     8/16/82                ACTUAL ROAD LOAD   8.4 KW( 11.3 HP)
ENGINE 3.8 L(231. CID) V-6                  BAG CART NO.  1                 GASOLINE  EM-518-F
TRANSMISSION A3                             DYNO NO.      3                 ODOMETER 50258. KM(31229. MILES)
                                            CVS NO.   2

BAROMETER 742.44 MM HG(29.23 IN HG)         DRY BULB TEMP. 21.1 DEG C(70.0 DEG F)
RELATIVE HUMIDITY  77. PCT                  ABS. HUMIDITY 12.4 GM/KG
BAG RESULTS                                                                 NOX HUMIDITY CORRECTION FACTOR  1.06
   TEST CYCLE                                  C IDLE

   BLOWER DIF P MM. H2O(IN. H2O)            774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)          774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)         43.9 (111.0)
   BLOWER REVOLUTIONS                          24080.
   TOT FLOW STD. CU. METRES(SCF)             44.7 ( 1579.)
   THC SAMPLE METER/RANGE/PPM               31.6/ 3/ 316.
   THC BCKGRD METER/RANGE/PPM                1.3/ 3/  13.
   CO  SAMPLE METER/RANGE/PPM               73.6/12/ 170.
   CO  BCKGRD METER/RANGE/PPM                1.8/12/   3.
   CO2 SAMPLE METER/RANGE/PCT               39.8/ 3/ .6740
   CO2 BCKGRD METER/RANGE/PCT                3.1/ 3/ .0474
   NOX SAMPLE METER/RANGE/PPM               49.9/ 1/ 14.8
   NOX BCKGRD METER/RANGE/PPM                4.9/ 1/  1.4
   DILUTION FACTOR                               18.56
   THC CONCENTRATION PPM                         304.
   CO  CONCENTRATION PPM                         160.
   CO2 CONCENTRATION PCT                         .6291
   NOX CONCENTRATION PPM                         13.5
   THC MASS GRAMS                                 7.83
   CO  MASS GRAMS                                 8.34
   CO2 MASS GRAMS                                515.1
   NOX MASS GRAMS                                 1.22
   RUN TIME               SECONDS                300.
        DFC, WET (DRY)                        .946 ( .923)
        SCF, WET (DRY)                       1.000 ( .969)
        VOL (SCM)                                 44.7
        SAM BLR (SCM)                             0.00

   TEST NUMBER,                                953
   BAROMETER,            MM HG                  742.4
   HUMIDITY,             G/KG                    12.4
   TEMPERATURE,          DEG C                   21.1
   CARBON DIOXIDE,        G/ min                103.0
   FUEL CONSUMPTION,      L/100min                4.72

   HYDROCARBONS, (THC)    G/ min                  1.57
   CARBON MONOXIDE,       G/ min                  1.67
   OXIDES OF NITROGEN,    G/ min                   .24
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                                       H IDLE- VEHICLE EMISSIONS RESULTS -BUICK BASELINE
                                                PROJECT 05-6619-004

TEST NO.   953      RUN   1                 VEHICLE NO.95                   TEST WEIGHT  1644. KG( 3625. LBS)
VEHICLE MODEL   80 BUICK CENTURY            DATE     8/16/82                ACTUAL ROAD LOAD   8.4 KW( 11.3 HP)
ENGINE 3.8 L(231. CID) V-6                  BAG CART NO.  1                 GASOLINE  EM-518-F
TRANSMISSION A3                             DYNO NO.      3                 ODOMETER 50263. KM(31232. MILES)
                                            CVS NO.   2

BAROMETER 742.70 MM HG(29.24 IN HG)         DRY BULB TEMP. 21.7 DEG C(71.0 DEG F)
RELATIVE HUMIDITY  73. PCT                  ABS. HUMIDITY 12.1 GM/KG
BAG RESULTS                                                                 NOX HUMIDITY CORRECTION FACTOR  1.05
   TEST CYCLE                                  H IDLE

   BLOWER DIF P MM. H2O(IN. H2O)            774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)          774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)         42.8 (109.0)
   BLOWER REVOLUTIONS                          24032.
   TOT FLOW STD. CU. METRES(SCF)             44.7 ( 1580.)
   THC SAMPLE METER/RANGE/PPM               81.2/ 2/  81.
   THC BCKGRD METER/RANGE/PPM               12.3/ 2/  12.
   CO  SAMPLE METER/RANGE/PPM                5.6/13/   5.
   CO  BCKGRD METER/RANGE/PPM                3.7/13/   3.
   CO2 SAMPLE METER/RANGE/PCT               22.7/ 3/ .3678
   CO2 BCKGRD METER/RANGE/PCT                3.2/ 3/ .0490
   NOX SAMPLE METER/RANGE/PPM                6.9/ 1/  2.0
   NOX BCKGRD METER/RANGE/PPM                3.6/ 1/  1.1
   DILUTION FACTOR                               35.60
   THC CONCENTRATION PPM                          69.
   CO  CONCENTRATION PPM                           2.
   CO2 CONCENTRATION PCT                         .3202
   NOX CONCENTRATION PPM                          1.0
   THC MASS GRAMS                                 1.79
   CO  MASS GRAMS                                  .09
   CO2 MASS GRAMS                                262.2
   NOX MASS GRAMS                                  .09
   RUN TIME               SECONDS                300.
        DFC, WET (DRY)                        .972 ( .949)
        SCF, WET (DRY)                       1.000 ( .973)
        VOL (SCM)                                 44.7
        SAM BLR (SCM)                             0.00

   TEST NUMBER,                                953
   BAROMETER,            MM HG                  742.7
   HUMIDITY,             G/KG                    12.1
   TEMPERATURE,          DEG C                   21.7
   CARBON DIOXIDE,        G/min                  52.5
   FUEL CONSUMPTION,      L/10C min               2.29

   HYDROCARBONS, (THC)    G/min                    .36
   CARBON MONOXIDE,       G/min                    .02
   OXIDES OF NITROGEN,    G/min                    .02
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TABLE D-19 (Cont'd). TEST NO. 953 EMISSION RESULTS

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                                                 CNYCC - VEHICLE EMISSIONS RESULTS -BUICK BASELINE
                                                        PROJECT 05-6619-004

TEST NO.   953     RUN   1                       VEHICLE NO.95                        TEST WEIGHT  1644. KG( 3625. LBS)
VEHICLE MODEL  80 BUICK CENTURY                  DATE    8/16/82                      ACTUAL ROAD LOAD   8.4 KW( 11.3 HP)
ENGINE 3.8 L(231. CID) V-6                       BAG CART NO.  1                      GASOLINE  EM-518-F
TRANSMISSION A3                                  DYNO NO.      3                      ODOMETER 50276. KM(31240. MILES)
                                                 CVS NO.   2

BAROMETER 740.41 MM HG(29.15 IN HG)              DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)
RELATIVE HUMIDITY  54. PCT                       ABS. HUMIDITY 10.0 GM/KG             NOX HUMIDITY CORRECTION FACTOR   .98
BAG RESULTS
   TEST CYCLE                                      CNYCC

   BLOWER DIF P MM. H2O(IN. H2O)                 774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)               774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)              41.7 (107.0)
   BLOWER REVOLUTIONS                              57702.
   TOT FLOW STD. CU. METRES(SCF)                 107.2 ( 3787.)
   THC SAMPLE METER/RANGE/PPM                    63.6/ 3/ 636.
   THC BCKGRD METER/RANGE/PPM                     1.6/ 3/  16.
   CO  SAMPLE METER/RANGE/PPM                    59.1/12/ 129.
   CO  BCKGRD METER/RANGE/PPM                     1.0/12/   2.
   CO2 SAMPLE METER/RANGE/PCT                    31.5/ 3/ .5225
   CO2 BCKGRD METER/RANGE/PCT                     2.9/ 3/ .0444
   NOX SAMPLE METER/RANGE/PPM                    25.9/ 1/  7.7
   NOX BCKGRD METER/RANGE/PPM                     2.5/ 1/   .7
   DILUTION FACTOR                                  22.38
   THC CONCENTRATION PPM                            621.
   CO  CONCENTRATION PPM                            124.
   CO2 CONCENTRATION PCT                            .4801
   NOX CONCENTRATION PPM                            7.0
   THC MASS GRAMS                                   38.38
   CO  MASS GRAMS                                   15.46
   CO2 MASS GRAMS                                   942.6
   NOX MASS GRAMS                                    1.40
   RUN TIME                 SECONDS                 721.
        DFC, WET (DRY)                            .955 ( .939)
        SCF, WET (DRY)                           1.000 ( .978)
        VOL (SCM)                                   107.2
        SAM BLR (SCM)                                0.00
        KM  (MEASURED)                               .82

   TEST NUMBER,                                   953
   BAROMETER,               MM HG                 740.4
   HUMIDITY,                G/KG                   10.0
   TEMPERATURE,             DEG C                  23.3
   CARBON DIOXIDE,           G/KM                1154.1  G/min      78.4
   FUEL CONSUMPTION,        L/100KM                56.89  L/100min   3.88

   HYDROCARBONS, (THC)      G/KM                   46.99  G/min      3.19
   CARBON MONOXIDE,         G/KM                   18.93  G/min      1.29
   OXIDES OF NITROGEN,      G/KM                    1.72  G/min      0.12
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                                                 H NYCC- VEHICLE EMISSIONS RESULTS -BUICK BASELINE
                                                        PROJECT 05-6619-004

TEST NO.   953     RUN   1                       VEHICLE NO.95                        TEST WEIGHT  1644. KG( 3625. LBS)
VEHICLE MODEL   80 BUICK CENTURY                 DATE    8/16/82                      ACTUAL ROAD LOAD   8.4 KW( 11.3 HP)
ENGINE 3.8 L(231. CID) V-6                       BAG CART NO.  1                      GASOLINE  EM-518-F
TRANSMISSION A3                                  DYNO NO.      3                      ODOMETER 50263. KM(31232. MILES)
                                                 CVS NO.   2

BAROMETER 742.70 MM HG(29.24 IN HG)              DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)
RELATIVE HUMIDITY  62. PCT                       ABS. HUMIDITY 11.4 GM/KG             NOX HUMIDITY CORRECTION FACTOR  1.02
BAG RESULTS
   TEST CYCLE                                      H NYCC

   BLOWER DIF P MM. H2O(IN. H2O)                 774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)               774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)              39.4 (103.0)
   BLOWER REVOLUTIONS                              57816.
   TOT FLOW STD. CU. METRES(SCF)                 108.3 ( 3824.)
   THC SAMPLE METER/RANGE/PPM                    86.0/ 2/  86.
   THC BCKGRD METER/RANGE/PPM                    11.4/ 2/  11.
   CO  SAMPLE METER/RANGE/PPM                    39.7/13/  37.
   CO  BCKGRD METER/RANGE/PPM                     3.5/13/   3.
   CO2 SAMPLE METER/RANGE/PCT                    29.6/ 3/ .4885
   CO2 BCKGRD METER/RANGE/PCT                     3.2/ 3/ .0490
   NOX SAMPLE METER/RANGE/PPM                    14.6/ 1/  4.3
   NOX BCKGRD METER/RANGE/PPM                     3.2/ 1/   .9
   DILUTION FACTOR                                  26.76
   THC CONCENTRATION PPM                            75.
   CO  CONCENTRATION PPM                            33.
   CO2 CONCENTRATION PCT                            .4414
   NOX CONCENTRATION PPM                            3.4
   THC MASS GRAMS                                   4.68
   CO  MASS GRAMS                                   4.14
   CO2 MASS GRAMS                                   875.0
   NOX MASS GRAMS                                    .73
   RUN TIME                 SECONDS                 722.
        DFC, WET (DRY)                            .963 ( .943)
        SCF, WET (DRY)                           1.000 ( .975)
        VOL (SCM)                                   108.3
        SAM BLR (SCM)                                0.00
        KM  (MEASURED)                               .81

   TEST NUMBER,                                   953
   BAROMETER,               MM HG                 742.7
   HUMIDITY,                G/KG                   11.4
   TEMPERATURE,             DEG C                  23.3
   CARBON DIOXIDE,           G/KM                1081.3     G/min        72.7
   FUEL CONSUMPTION,        L/100KM                47.28    L/100min      3.18

   HYDROCARBONS, (THC)      G/KM                    5.79    G/min         0.39
   CARBON MONOXIDE,         G/KM                    5.12    G/min         0.34
   OXIDES OF NITROGEN,      G/KM                     .90    G/min         0.06
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TABLE D-20. TEST NO. 956 EMISSION RESULTS

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                                              C IDLE- VEHICLE EMISSIONS RESULTS - RBI W/O AIR
                                                   PROJECT 05-6619-004

TEST NO.   956      RUN   1                        VEHICLE NO.95                        TEST WEIGHT  1644. KG( 3625. LBS)
VEHICLE MODEL   80 BUICK CENTURY                   DATE     8/18/82                     ACTUAL ROAD LOAD   8.4 KW( 11.3 HP)
ENGINE 3.8 L(231. CID) V-6                         BAG CART NO.  1                      GASOLINE  EM-518-F
TRANSMISSION A3                                    DYNO NO.      3                      ODOMETER 50290. KM(31249. MILES)
                                                   CVS NO.   2

BAROMETER 740.41 MM HG(29.15 IN HG)                DRY BULB TEMP. 21.1 DEG C(70.0 DEG F)
RELATIVE HUMIDITY  81. PCT                         ABS. HUMIDITY 13.1 GM/KG             NOX HUMIDITY CORRECTION FACTOR  1.09
BAG RESULTS
   TEST CYCLE                                           C IDLE

   BLOWER DIF P MM. H2O(IN. H2O)                  774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)                774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)               43.3 (110.0)
   BLOWER REVOLUTIONS                                24096.
   TOT FLOW STD. CU. METRES(SCF)                   44.7 ( 1577.)
   THC SAMPLE METER/RANGE/PPM                     27.3/ 3/ 273.
   THC BCKGRD METER/RANGE/PPM                      1.1/ 3/  11.
   CO  SAMPLE METER/RANGE/PPM                     83.5/ 2/4884.
   CO  BCKGRD METER/RANGE/PPM                       .1/ 2/   4.
   CO2 SAMPLE METER/RANGE/PCT                     41.8/ 3/ .7113
   CO2 BCKGRD METER/RANGE/PCT                      3.1/ 3/ .0474
   NOX SAMPLE METER/RANGE/PPM                     21.6/ 1/  6.4
   NOX BCKGRD METER/RANGE/PPM                      3.6/ 1/  1.1
   DILUTION FACTOR                                     11.10
   THC CONCENTRATION PPM                               263.
   CO  CONCENTRATION PPM                              4686.
   CO2 CONCENTRATION PCT                               .6681
   NOX CONCENTRATION PPM                                5.5
   THC MASS GRAMS                                       6.77
   CO  MASS GRAMS                                     243.63
   CO2 MASS GRAMS                                     546.3
   NOX MASS GRAMS                                        .51
   RUN TIME                 SECONDS                    300.
        DFC, WET (DRY)                             .910 ( .886)
        SCF, WET (DRY)                            1.000 ( .967)
        VOL (SCM)                                       44.7
        SAM BLR (SCM)                                   0.00


   TEST NUMBER,                                      956
   BAROMETER,              MM HG                      740.4
   HUMIDITY,               G/KG                        13.1
   TEMPERATURE,            DEG C                       21.1
   CARBON DIOXIDE,          G/MIN                     109.3
   FUEL CONSUMPTION,        L/100 MIN                   8.12

   HYDROCARBONS, (THC)      G/MIN                       1.35
   CARBON MONOXIDE,         G/MIN                      48.73
   OXIDES OF NITROGEN,      G/MIN                        .10


                                              H IDLE- VEHICLE EMISSIONS RESULTS - RBI W/O AIR
                                                   PROJECT 05-6619-004

TEST NO.   956      RUN   1                        VEHICLE NO.95                        TEST WEIGHT  1644. KG( 3625. LBS)
VEHICLE MODEL   80  BUICK CENTURY                  DATE     8/18/82                     ACTUAL ROAD LOAD   8.4 KW( 11.3 HP)
ENGINE 3.8 L(231. CID) V-6                         BAG CART NO.  1                      GASOLINE  EM-518-F
TRANSMISSION A3                                    DYNO NO.      3                      ODOMETER 50295. KM(31252. MILES)
                                                   CVS NO.   2

BAROMETER 740.66 MM HG(29.16 IN HG)                DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)
RELATIVE HUMIDITY  70. PCT                         ABS. HUMIDITY 12.9 GM/KG             NOX HUMIDITY CORRECTION FACTOR  1.08
BAG RESULTS
   TEST CYCLE                                           H IDLE

   BLOWER DIF P MM. H2O(IN. H2O)                  889.0 (35.0)
   BLOWER INLET P MM. H2O(IN. H2O)                889.0 (35.0)
   BLOWER INLET TEMP. DEG. C(DEG. F)               43.3 (110.0)
   BLOWER REVOLUTIONS                                24026.
   TOT FLOW STD. CU. METRES(SCF)                   43.8 ( 1547.)
   THC SAMPLE METER/RANGE/PPM                     12.1/ 3/ 121.
   THC BCKGRD METER/RANGE/PPM                      1.2/ 3/  12.
   CO  SAMPLE METER/RANGE/PPM                     47.1/ 3/1143.
   CO  BCKGRD METER/RANGE/PPM                       .1/ 3/   2.
   CO2 SAMPLE METER/RANGE/PCT                     28.2/ 3/ .4637
   CO2 BCKGRD METER/RANGE/PCT                      3.0/ 3/ .0459
   NOX SAMPLE METER/RANGE/PPM                     28.0/ 1/  8.3
   NOX BCKGRD METER/RANGE/PPM                      3.2/ 1/   .9
   DILUTION FACTOR                                     22.85
   THC CONCENTRATION PPM                               110.
   CO  CONCENTRATION PPM                              1105.
   CO2 CONCENTRATION PCT                               .4198
   NOX CONCENTRATION PPM                                7.4
   THC MASS GRAMS                                       2.77
   CO  MASS GRAMS                                      56.37
   CO2 MASS GRAMS                                     336.7
   NOX MASS GRAMS                                        .67
   RUN TIME                 SECONDS                    300.
        DFC, WET (DRY)                             .956 ( .935)
        SCF, WET (DRY)                            1.000 ( .973)
        VOL (SCM)                                       43.8
        SAM BLR (SCM)                                   0.00


   TEST NUMBER,                                      956
   BAROMETER,              MM HG                      740.7
   HUMIDITY,               G/KG                        12.9
   TEMPERATURE,            DEG C                       23.3
   CARBON DIOXIDE,          G/ min                     67.4
   FUEL CONSUMPTION,        L/10C min                   3.71

   HYDROCARBONS, (THC)      G/ min                       .55
   CARBON MONOXIDE,         G/ min                     11.28
   OXIDES OF NITROGEN,      G/ min                       .13
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TABLE D-20 (Cont'd). TEST NO. 956 EMISSION RESULTS

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                                          C NYCC- VEHICLE EMISSIONS RESULTS - RBI W/O AIR
                                                PROJECT 05-6619-004

TEST NO.   956       RUN   1                 VEHICLE NO.95                      TEST WEIGHT  1644. KG( 3625. LBS)
VEHICLE MODEL   80 BUICK CENTURY             DATE    8/18/82                    ACTUAL ROAD LOAD   8.4 KW( 11.3 HP)
ENGINE 3.8 L(231. CID) V-6                   BAG CART NO.  1                    GASOLINE  EM-518-F
TRANSMISSION A3                              DYNO NO.      3                    ODOMETER 50316. KM(31265. MILES)
                                             CVS NO.   2

BAROMETER 740.66 MM HG(29.16 IN HG)          DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)
RELATIVE HUMIDITY  63. PCT                   ABS. HUMIDITY 12.4 GM/KG           NOX HUMIDITY CORRECTION FACTOR  1.06
BAG RESULTS
   TEST CYCLE                                   C NYCC

   BLOWER DIF P MM. H2O(IN. H2O)             774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)           774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)          42.2 (108.0)
   BLOWER REVOLUTIONS                           57842.
   TOT FLOW STD. CU. METRES(SCF)             107.4 ( 3794.)
   THC SAMPLE METER/RANGE/PPM                15.0/ 3/ 150.
   THC BCKGRD METER/RANGE/PPM                 1.5/ 3/  15.
   CO  SAMPLE METER/RANGE/PPM                52.6/ 3/1296.
   CO  BCKGRD METER/RANGE/PPM                  .2/ 3/    5.
   CO2 SAMPLE METER/RANGE/PCT                37.2/ 3/ .6260
   CO2 BCKGRD METER/RANGE/PCT                 3.5/ 3/ .0536
   NOX SAMPLE METER/RANGE/PPM                58.2/ 1/ 17.3
   NOX BCKGRD METER/RANGE/PPM                 5.0/ 1/  1.5
   DILUTION FACTOR                                17.49
   THC CONCENTRATION PPM                          136.
   CO  CONCENTRATION PPM                         1250.
   CO2 CONCENTRATION PCT                          .5754
   NOX CONCENTRATION PPM                          15.9
   THC MASS GRAMS                                  8.42
   CO  MASS GRAMS                                156.32
   CO2 MASS GRAMS                                1131.9
   NOX MASS GRAMS                                  3.46
   RUN TIME                  SECONDS              722.
        DFC, WET (DRY)                        .943 ( .924)
        SCF, WET (DRY)                       1.000 ( .974)
        VOL (SCM)                                 107.4
        SAM BLR (SCM)                              0.00
        KM  (MEASURED)                              .80

   TEST NUMBER,                                956
   BAROMETER,              MM HG                 740.7
   HUMIDITY,               G/KG                   12.4
   TEMPERATURE,            DEG C                  24.4
   CARBON DIOXIDE,          G/KM                1416.8   G/min      94.1
   FUEL CONSUMPTION,        L/100KM               75.02  L/100min    4.99

   HYDROCARBONS, (THC)      G/KM                  10.54  G/min       0.70
   CARBON MONOXIDE,         G/KM                 195.40  G/min      12.99
   OXIDES OF NITROGEN,      G/KM                   4.34  G/min       0.29

                                           H NYCC- VEHICLE EMISSIONS RESULTS - RBI W/O AIR
                                                 PROJECT 05-6619-004

TEST NO.   956       RUN   1                 VEHICLE NO.95                      TEST WEIGHT  1644. KG( 3625. LBS)
VEHICLE MODEL   80 BUICK CENTURY             DATE    8/18/82                    ACTUAL ROAD LOAD   8.4 KW( 11.3 HP)
ENGINE 3.8 L(231. CID) V-6                   BAG CART NO.  1                    GASOLINE  EM-518-F
TRANSMISSION A3                              DYNO NO.      3                    ODOMETER 50236. KM(31215. MILES)
                                             CVS NO.   2

BAROMETER 740.92 MM HG(29.17 IN HG)          DRY BULB TEMP. 21.1 DEG C(70.0 DEG F)
RELATIVE HUMIDITY  81. PCT                   ABS. HUMIDITY 13.1 GM/KG           NOX HUMIDITY CORRECTION FACTOR  1.09
BAG RESULTS
   TEST CYCLE                                   H NYCC

   BLOWER DIF P MM. H2O(IN. H2O)             774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)           774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)          40.6 (105.0)
   BLOWER REVOLUTIONS                           57742.
   TOT FLOW STD. CU. METRES(SCF)             107.6 ( 3800.)
   THC SAMPLE METER/RANGE/PPM                12.7/ 3/ 127.
   THC BCKGRD METER/RANGE/PPM                 1.8/ 3/  18.
   CO  SAMPLE METER/RANGE/PPM                36.8/ 3/ 872.
   CO  BCKGRD METER/RANGE/PPM                  .2/ 3/    5.
   CO2 SAMPLE METER/RANGE/PCT                34.7/ 3/ .5803
   CO2 BCKGRD METER/RANGE/PCT                 2.9/ 3/ .0444
   NOX SAMPLE METER/RANGE/PPM                68.3/ 1/ 20.3
   NOX BCKGRD METER/RANGE/PPM                 2.9/ 1/    .9
   DILUTION FACTOR                                19.80
   THC CONCENTRATION PPM                          110.
   CO  CONCENTRATION PPM                          835.
   CO2 CONCENTRATION PCT                          .5381
   NOX CONCENTRATION PPM                          19.5
   THC MASS GRAMS                                  6.82
   CO  MASS GRAMS                                104.63
   CO2 MASS GRAMS                                1060.4
   NOX MASS GRAMS                                  4.36
   RUN TIME                  SECONDS              721.
        DFC, WET (DRY)                        .949 ( .925)
        SCF, WET (DRY)                       1.000 ( .968)
        VOL (SCM)                                 107.6
        SAM BLR (SCM)                              0.00
        KM  (MEASURED)                              .80

   TEST NUMBER,                                956
   BAROMETER,              MM HG                 740.9
   HUMIDITY,               G/KG                   13.1
   TEMPERATURE,            DEG C                  21.1
   CARBON DIOXIDE,          G/KM                1328.5  G/min      88.2
   FUEL CONSUMPTION,        L/100KM               66.65 L/100min   4.44

   HYDROCARBONS, (THC)      G/KM                   8.55 G/min       0.57
   CARBON MONOXIDE,         G/KM                 130.79 G/min       8.71
   OXIDES OF NITROGEN,      G/KM                   5.46 G/min       0.36
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TABLE D-21. TEST NO. 957 EMISSION RESULTS

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                                      C IDLE- VEHICLE EMISSIONS RESULTS - RBI W/O AIR
                                                   PROJECT 05-6619-004

TEST NO.   957      RUN   1                    VEHICLE NO.95                        TEST WEIGHT  1644. KG( 3625. LBS)
VEHICLE MODEL   80 BUICK CENTURY               DATE      8/19/82                    ACTUAL ROAD LOAD   8.4 KW( 11.3 HP)
ENGINE 3.8 L(231. CID) V-6                     BAG CART NO.  1                      GASOLINE  EM-518-F
TRANSMISSION A3                                DYNO NO.      3                      ODOMETER 50323. KM(31269. MILES)
                                               CVS NO.   2

BAROMETER 742.95 MM HG(29.25 IN HG)            DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)
RELATIVE HUMIDITY  66. PCT                     ABS. HUMIDITY 12.1 GM/KG             NOX HUMIDITY CORRECTION FACTOR  1.05
BAG RESULTS
   TEST CYCLE                                     C IDLE

   BLOWER DIF P MM. H2O(IN. H2O)               774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)             774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)            43.3 (110.0)
   BLOWER REVOLUTIONS                             24055.
   TOT FLOW STD. CU. METRES(SCF)                44.8 ( 1580.)
   THC SAMPLE METER/RANGE/PPM                  27.6/ 3/ 276.
   THC BCKGRD METER/RANGE/PPM                   1.2/ 3/  12.
   CO  SAMPLE METER/RANGE/PPM                  80.9/ 2/4637.
   CO  BCKGRD METER/RANGE/PPM                    .1/ 2/   4.
   CO2 SAMPLE METER/RANGE/PCT                  43.8/ 3/ .7489
   CO2 BCKGRD METER/RANGE/PCT                   2.8/ 3/ .0428
   NOX SAMPLE METER/RANGE/PPM                  23.8/ 1/  7.1
   NOX BCKGRD METER/RANGE/PPM                   3.1/ 1/   .9
   DILUTION FACTOR                                10.95
   THC CONCENTRATION PPM                          265.
   CO  CONCENTRATION PPM                         4468.
   CO2 CONCENTRATION PCT                          .7100
   NOX CONCENTRATION PPM                           6.2
   THC MASS GRAMS                                  6.84
   CO  MASS GRAMS                                232.78
   CO2 MASS GRAMS                                581.7
   NOX MASS GRAMS                                   .56
   RUN TIME               SECONDS                300.
        DFC, WET (DRY)                         .909 ( .889)
        SCF, WET (DRY)                        1.000 ( .972)
        VOL (SCM)                                 44.8
        SAM BLR (SCM)                             0.00


   TEST NUMBER,                                 957
   BAROMETER,             MM HG                  743.0
   HUMIDITY,              G/KG                    12.1
   TEMPERATURE,           DEG C                   23.3
   CARBON DIOXIDE,         G/min                 116.4
   FUEL CONSUMPTION,       L/100 min               8.28

    YDROCARBONS, (THC)    G/min                    1.37
   CARBON MONOXIDE,       G/min                   46.57
   OXIDES OF NITROGEN,    G/min                     .11
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                                      H IDLE- VEHICLE EMISSIONS RESULTS - RBI W/O AIR
                                                   PROJECT 05-6619-004

TEST NO.   957      RUN   1                    VEHICLE NO.95                        TEST WEIGHT  1644. KG( 3625. LBS)
VEHICLE MODEL   80 BUICK CENTURY               DATE      8/19/82                    ACTUAL ROAD LOAD   8.4 KW( 11.3 HP)
ENGINE 3.8 L(231. CID) V-6                     BAG CART NO.  1                      GASOLINE  EM-518-F
TRANSMISSION A3                                DYNO NO.      3                      ODOMETER 50327. KM(31272. MILES)
                                               CVS NO.   2

BAROMETER 742.95 MM HG(29.25 IN HG)            DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)
RELATIVE HUMIDITY  59. PCT                     ABS. HUMIDITY 11.6 GM/KG             NOX HUMIDITY CORRECTION FACTOR  1.03
BAG RESULTS
   TEST CYCLE                                     H IDLE

   BLOWER DIF P MM. H2O(IN. H2O)               774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)             774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)            42.8 (109.0)
   BLOWER REVOLUTIONS                             24066.
   TOT FLOW STD. CU. METRES(SCF)                44.8 ( 1582.)
   THC SAMPLE METER/RANGE/PPM                  11.9/ 3/ 119.
   THC BCKGRD METER/RANGE/PPM                   1.1/ 3/  11.
   CO  SAMPLE METER/RANGE/PPM                  42.4/ 3/1017.
   CO  BCKGRD METER/RANGE/PPM                    .3/ 3/   7.
   CO2 SAMPLE METER/RANGE/PCT                  28.1/ 3/ .4619
   CO2 BCKGRD METER/RANGE/PCT                   2.3/ 3/ .0351
   NOX SAMPLE METER/RANGE/PPM                  32.2/ 1/  9.6
   NOX BCKGRD METER/RANGE/PPM                   3.3/ 1/  1.0
   DILUTION FACTOR                                23.40
   THC CONCENTRATION PPM                          108.
   CO  CONCENTRATION PPM                          983.
   CO2 CONCENTRATION PCT                          .4283
   NOX CONCENTRATION PPM                           8.6
   THC MASS GRAMS                                  2.80
   CO  MASS GRAMS                                 51.26
   CO2 MASS GRAMS                                351.4
   NOX MASS GRAMS                                   .76
   RUN TIME               SECONDS                300.
        DFC, WET (DRY)                         .957 ( .939)
        SCF, WET (DRY)                        1.000 ( .977)
        VOL (SCM)                                 44.8
        SAM BLR (SCM)                             0.00


   TEST NUMBER,                                 957
   BAROMETER,             MM HG                  743.0
   HUMIDITY,              G/KG                    11.6
   TEMPERATURE,           DEG C                   24.4
   CARBON DIOXIDE,         G/min                  70.3
   FUEL CONSUMPTION,       L/100 min               3.76

   HYDROCARBONS, (THC)    G/min                     .56
   CARBON MONOXIDE,       G/min                   10.25
   OXIDES OF NITROGEN,    G/min                     .15
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TABLE D-21 (Cont'd). TEST NO. 957 EMISSION RESULTS

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                                        C NYCC- VEHICLE EMISSIONS RESULTS - RBI W/O AIR
                                                PROJECT 05-6619-004

TEST NO.   957      RUN   1                VEHICLE NO.95                        TEST WEIGHT  1644. KG( 3625. LBS)
VEHICLE MODEL  80 BUICK CENTURY            DATE    8/19/82                      ACTUAL ROAD LOAD   8.4 KW( 11.3 HP)
ENGINE 3.8 L(231. CID) V-6                 BAG CART NO.  1                      GASOLINE  EM-518-F
TRANSMISSION A3                            DYNO NO.      3                      ODOMETER 50342. KM(31281. MILES)
                                           CVS NO.   2

BAROMETER 742.95 MM HG(29.25 IN HG)        DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)  NOX HUMIDITY CORRECTION FACTOR  1.04
RELATIVE HUMIDITY  62. PCT                 ABS. HUMIDITY 11.9 GM/KG
BAG RESULTS
   TEST CYCLE                                 C NYCC

   BLOWER DIF P MM. H2O(IN. H2O)           774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)         774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)        42.2 (108.0)
   BLOWER REVOLUTIONS                         57892.
   TOT FLOW STD. CU. METRES(SCF)           107.9 ( 3810.)
   THC SAMPLE METER/RANGE/PPM              15.3/ 3/ 153.
   THC BCKGRD METER/RANGE/PPM               1.4/ 3/  14.
   CO  SAMPLE METER/RANGE/PPM              51.5/ 3/1265.
   CO  BCKGRD METER/RANGE/PPM                .2/ 3/   5.
   CO2 SAMPLE METER/RANGE/PCT              35.8/ 3/ .6003
   CO2 BCKGRD METER/RANGE/PCT               2.7/ 3/ .0413
   NOX SAMPLE METER/RANGE/PPM              55.5/ 1/ 16.5
   NOX BCKGRD METER/RANGE/PPM               2.4/ 1/   .7
   DILUTION FACTOR                              18.15
   THC CONCENTRATION PPM                        140.
   CO  CONCENTRATION PPM                       1221.
   CO2 CONCENTRATION PCT                        .5613
   NOX CONCENTRATION PPM                        15.8
   THC MASS GRAMS                                8.70
   CO  MASS GRAMS                              153.34
   CO2 MASS GRAMS                              1109.0
   NOX MASS GRAMS                                3.40
   RUN TIME                 SECONDS             722.
        DFC, WET (DRY)                      .945 ( .926)
        SCF, WET (DRY)                     1.000 ( .974)
        VOL (SCM)                               107.9
        SAM BLR (SCM)                            0.00
        KM  (MEASURED)                            .80

   TEST NUMBER,                               957
   BARONETER,               MM HG              743.0
   HUMIDITY,                G/KG                11.9
   TEMPERATURE,             DEG C               23.9
   CARBON DIOXIDE,           G/KM             1381.0   G/min       92.2
   FUEL CONSUMPTION,        L/100KM             73.22  L/100min     4.87

   HYDROCARBONS, (THC)       G/KM               10.83  G/min        0.72
   CARBON MONOXIDE,          G/KM              122.67  G/min       12.74
   OXIDES OF NITROGEN,       G/KM                4.23  G/min        0.28
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                                        H NYCC- VEHICLE EMISSIONS RESULTS - RBI W/O AIR
                                                PROJECT 05-6619-004

TEST NO.   957      RUN   1                VEHICLE NO.95                        TEST WEIGHT  1644. KG( 3625. LBS)
VEHICLE MODEL  80 BUICK CENTURY            D TE    8/19/82                      ACTUAL ROAD LOAD   8.4 KW( 11.3 HP)
ENGINE 3.8 L(231. CID) V-6                 BAG CART NO.  1                      GASOLINE  EM-518-F
TRANSMISSION A3                            DYNO NO.      3                      ODOMETER 50334. KM(31276. MILES)
                                           CVS NO.   2

BAROMETER 743.20 MM HG(29.26 IN HG)        DRY BULB TEMP. 25.0 DEG C(77.0 DEG F)  NOX HUMIDITY CORRECTION FACTOR  1.02
RELATIVE HUMIDITY  56. PCT                 ABS. HUMIDITY 11.4 GM/KG
BAG RESULTS
   TEST CYCLE                                 H NYCC

   BLOWER DIF P MM. H2O(IN. H2O)           774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)         774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)        42.8 (109.0)
   BLOWER REVOLUTIONS                         57807.
   TOT FLOW STD. CU. METRES(SCF)           107.7 ( 3802.)
   THC SAMPLE METER/RANGE/PPM              11.9/ 3/ 119.
   THC BCKGRD METER/RANGE/PPM               1.0/ 3/  10.
   CO  SAMPLE METER/RANGE/PPM              32.7/ 3/ 768.
   CO  BCKGRD METER/RANGE/PPM                .1/ 3/   2.
   CO2 SAMPLE METER/RANGE/PCT              35.2/ 3/ .5894
   CO2 BCKGRD METER/RANGE/PCT               2.7/ 3/ .0413
   NOX SAMPLE METER/RANGE/PPM              73.2/ 1/ 21.8
   NOX BCKGRD METER/RANGE/PPM               3.0/ 1/   .9
   DILUTION FACTOR                              19.83
   THC CONCENTRATION PPM                        110.
   CO  CONCENTRATION PPM                        744.
   CO2 CONCENTRATION PCT                        .5502
   NOX CONCENTRATION PPM                        20.9
   THC MASS GRAMS                                6.80
   CO  MASS GRAMS                               93.21
   CO2 MASS GRAMS                              1084.6
   NOX MASS GRAMS                                4.41
   RUN TIME                 SECONDS             722.
        DFC, WET (DRY)                      .950 ( .932)
        SCF, WET (DRY)                     1.000 ( .976)
        VOL (SCM)                               107.7
        SAM BLR (SCM)                            0.00
        KM  (MEASURED)                            .79

   TEST NUMBER,                               957
   BAROMETER,               MM HG              743.2
   HUMIDITY,                G/KG                11.4
   TEMPERATURE,             DEG C               25.0
   CARBON DIOXIDE,           G/KM             1375.4   G/min       90.1
   FUEL CONSUMPTION,        L/100KM             67.80  L/100min     4.45

   HYDROCARBONS, (THC)       G/KM                8.62  G/min        0.57
   CARBON MONOXIDE,          G/KM              117.99  G/min        7.75
   OXIDES OF NITROGEN,       G/KM                5.59  G/min        0.37
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TABLE D-22. TEST NO. 958 EMISSION RESULTS

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                                         C-IDLE- VEHICLE EMISSIONS RESULTS - RBI W/O AIR
                                                PROJECT 05-6619-004

TEST NO.   958      RUN   1                      VEHICLE NO.95                     TEST WEIGHT  1644. KG( 3625. LBS)
VEHICLE MODEL  80 BUICK CENTURY                  DATE    8/20/82                   ACTUAL ROAD LOAD   8.4 KW( 11.3 HP)
ENGINE 3.8 L(231. CID) V-6                       BAG CART NO.  1                   GASOLINE  EM-518-F
TRANSMISSION A3                                  DYNO NO.      3                   ODOMETER 50347. KM(31284. MILES)
                                                 CVS NO.   2

BAROMETER 744.98 MM HG(29.33 IN HG)              DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
RELATIVE HUMIDITY  66. PCT                       ABS. HUMIDITY 12.6 GM/KG          NOX HUMIDITY CORRECTION FACTOR  1.07
BAG RESULTS
   TEST CYCLE                                      C-IDLE

   BLOWER DIF P MM. H2O(IN. H2O)                 774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)               774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)              43.9 (111.0)
   BLOWER REVOLUTIONS                               24017.
   TOT FLOW STD. CU. METRES(SCF)                  44.8 ( 1581.)
   THC SAMPLE METER/RANGE/PPM                    28.1/ 3/ 281.
   THC BCKGRD METER/RANGE/PPM                     1.5/ 3/  15.
   CO  SAMPLE METER/RANGE/PPM                    82.4/ 2/4778.
   CO  BCKGRD METER/RANGE/PPM                      .2/ 2/   7.
   CO2 SAMPLE METER/RANGE/PCT                    43.9/ 3/ .7508
   CO2 BCKGRD METER/RANGE/PCT                     3.3/ 3/ .0505
   NOX SAMPLE METER/RANGE/PPM                    22.1/ 1/  6.6
   NOX BCKGRD METER/RANGE/PPM                     2.5/ 1/   .7
   DILUTION FACTOR                                   10.81
   THC CONCENTRATION PPM                             267.
   CO  CONCENTRATION PPM                            4601.
   CO2 CONCENTRATION PCT                             .7049
   NOX CONCENTRATION PPM                              5.9
   THC MASS GRAMS                                     6.90
   CO  MASS GRAMS                                   239.80
   CO2 MASS GRAMS                                   577.8
   NOX MASS GRAMS                                     .54
   RUN TIME             SECONDS                     299.
        DFC, WET (DRY)                           .907 ( .888)
        SCF, WET (DRY)                          1.000 ( .972)
        VOL (SCM)                                    44.8
        SAM BLR (SCM)                                0.00


   TEST NUMBER,                                    958
   BAROMETER,           MM HG                      745.0
   HUMIDITY,            G/KG                        12.6
   TEMPERATURE,         DEG C                       23.9
   CARBON DIOXIDE,       G/min                     115.9
   FUEL CONSUMPTION,     L/100min                    8.37

   HYDROCARBONS, (THC)   G/ min                      1.38
   CARBON MONOXIDE,      G/ min                     48.12
   OXIDES OF NITROGEN,   G/ min                      .11

                                         H IDLE- VEHICLE EMISSIONS RESULTS - RBI W/O AIR
                                                PROJECT 05-6619-004

TEST NO.   958      RUN   1                      VEHICLE NO.95                     TEST WEIGHT  1644. KG( 3625. LBS)
VEHICLE MODEL  80 BUICK CENTURY                  DATE    8/20/82                   ACTUAL ROAD LOAD   8.4 KW( 11.3 HP)
ENGINE 3.8 L(231. CID) V-6                       BAG CART NO.  1                   GASOLINE  EM-518-F
TRANSMISSION A3                                  DYNO NO.      3                   ODOMETER 50353. KM(31288. MILES)
                                                 CVS NO.   2

BAROMETER 745.24 MM HG(29.34 IN HG)              DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)
RELATIVE HUMIDITY  62. PCT                       ABS. HUMIDITY 11.3 GM/KG          NOX HUMIDITY CORRECTION FACTOR  1.02
BAG RESULTS
   TEST CYCLE                                      H IDLE

   BLOWER DIF P MM. H2O(IN. H2O)                 774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)               774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)              41.1 (106.0)
   BLOWER REVOLUTIONS                               24030.
   TOT FLOW STD. CU. METRES(SCF)                  45.0 ( 1590.)
   THC SAMPLE METER/RANGE/PPM                    12.6/ 3/ 126.
   THC BCKGRD METER/RANGE/PPM                     1.5/ 3/  15.
   CO  SAMPLE METER/RANGE/PPM                    50.4/ 3/1234.
   CO  BCKGRD METER/RANGE/PPM                      .4/ 3/   9.
   CO2 SAMPLE METER/RANGE/PCT                    28.2/ 3/ .4637
   CO2 BCKGRD METER/RANGE/PCT                     2.8/ 3/ .0428
   NOX SAMPLE METER/RANGE/PPM                    30.0/ 1/  8.9
   NOX BCKGRD METER/RANGE/PPM                     2.4/ 1/   .7
   DILUTION FACTOR                                   22.48
   THC CONCENTRATION PPM                             112.
   CO  CONCENTRATION PPM                            1190.
   CO2 CONCENTRATION PCT                             .4228
   NOX CONCENTRATION PPM                              8.2
   THC MASS GRAMS                                     2.90
   CO  MASS GRAMS                                    62.39
   CO2 MASS GRAMS                                   348.6
   NOX MASS GRAMS                                     .72
   RUN TIME             SECONDS                     300.
        DFC, WET (DRY)                           .956 ( .936)
        SCF, WET (DRY)                          1.000 ( .976)
        VOL (SCM)                                    45.0
        SAM BLR (SCM)                                0.00


   TEST NUMBER,                                    958
   BAROMETER,           MM HG                      745.2
   HUMIDITY,            G/KG                        11.3
   TEMPERATURE,         DEG C                       23.3
   CARBON DIOXIDE,       G/min                      69.7
   FUEL CONSUMPTION,     L/100 min                   3.89

   HYDROCARBONS, (THC)   G/min                        .58
   CARBON MONOXIDE,      G/min                      12.48
   OXIDES OF NITROGEN,   G/min                        .15
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TABLE D-22 (Cont'd). TEST NO. 958 EMISSION RESULTS

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                                                C NYCC- VEHICLE EMISSIONS RESULTS - RBI W/O AIR
                                                     PROJECT 05-6619-004

TEST NO.   958       RUN   1                       VEHICLE NO.95                      TEST WEIGHT  1644. KG( 3625. LBS)
VEHICLE MODEL  80 BUICK CENTURY                    DATE    8/20/82                    ACTUAL ROAD LOAD   8.4 KW( 11.3 HP)
ENGINE 3.8 L(231. CID) V-6                         BAG CART NO.  1                    GASOLINE  EM-518-F
TRANSMISSION A3                                    DYNO NO.      3                    ODOMETER 50371. KM(31299. MILES)
                                                   CVS NO.   2

BAROMETER 744.47 MM HG(29.31 IN HG)                DRY BULB TEMP. 21.7 DEG C(71.0 DEG F)
RELATIVE HUMIDITY  81. PCT                         ABS. HUMIDITY 13.6 GM/KG           NOX HUMIDITY CORRECTION FACTOR  1.10
BAG RESULTS
   TEST CYCLE                                        C NYCC

   BLOWER DIF P MM. H2O(IN. H2O)                   774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)                 774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)                43.3 (110.0)
   BLOWER REVOLUTIONS                                 57788.
   TOT FLOW STD. CU. METRES(SCF)                   107.7 ( 3804.)
   THC SAMPLE METER/RANGE/PPM                      14.1/ 3/ 141.
   THC BCKGRD METER/RANGE/PPM                       1.2/ 3/  12.
   CO  SAMPLE METER/RANGE/PPM                      49.1/ 3/1198.
   CO  BCKGRD METER/RANGE/PPM                        .1/ 3/   2.
   CO2 SAMPLE METER/RANGE/PCT                      35.6/ 3/ .5967
   CO2 BCKGRD METER/RANGE/PCT                       2.8/ 3/ .0428
   NOX SAMPLE METER/RANGE/PPM                      61.1/ 1/ 18.2
   NOX BCKGRD METER/RANGE/PPM                       2.7/ 1/    .8
   DILUTION FACTOR                                    18.46
   THC CONCENTRATION PPM                              130.
   CO  CONCENTRATION PPM                             1151.
   CO2 CONCENTRATION PCT                              .5562
   NOX CONCENTRATION PPM                              17.4
   THC MASS GRAMS                                      8.05
   CO  MASS GRAMS                                    144.34
   CO2 MASS GRAMS                                    1097.0
   NOX MASS GRAMS                                      3.96
   RUN TIME                 SECONDS                   722.
        DFC, WET (DRY)                            .946 ( .921)
        SCF, WET (DRY)                           1.000 ( .968)
        VOL (SCM)                                    107.7
        SAM BLR (SCM)                                 0.00
        KM  (MEASURED)                                 .80

   TEST NUMBER,                                     958
   BAROMETER,               MM HG                    744.5
   HUMIDITY,                G/KG                      13.6
   TEMPERATURE,             DEG C                     21.7
   CARBON DIOXIDE,           G/KM                   1365.0  G/min      91.2
   FUEL CONSUMPTION,         L/100KM                  71.66  L/100min   4.76

   HYDROCARBONS, (THC)       G/KM                     10.02  G/min      0.67
   CARBON MONOXIDE,          G/KM                    180.43  G/min     12.00
   OXIDES OF NITROGEN,       G/KM                      4.93  G/min      0.33


                                                H NYCC- VEHICLE EMISSIONS RESULTS - RBI W/O AIR
                                                     PROJECT 05-6619-004

TEST NO.   958       RUN   1                       VEHICLE NO.95                      TEST WEIGHT  1644. KG( 3625. LBS)
VEHICLE MODEL  80 BUICK CENTURY                    DATE    8/20/82                    ACTUAL ROAD LOAD   8.4 KW( 11.3 HP)
ENGINE 3.8 L(231. CID) V-6                         BAG CART NO.  1                    GASOLINE  EM-518-F
TRANSMISSION A3                                    DYNO NO.      3                    ODOMETER 50360. KM(31292. MILES)
                                                   CVS NO.   2

BAROMETER 745.24 MM HG(29.34 IN HG)                DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)
RELATIVE HUMIDITY  62. PCT                         ABS. HUMIDITY 11.3 GM/KG           NOX HUMIDITY CORRECTION FACTOR  1.02
BAG RESULTS
   TEST CYCLE                                        H NYCC

   BLOWER DIF P MM. H2O(IN. H2O)                   774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)                 774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)                43.9 (111.0)
   BLOWER REVOLUTIONS                                 57717.
   TOT FLOW STD. CU. METRES(SCF)                   107.6 ( 3800.)
   THC SAMPLE METER/RANGE/PPM                      12.3/ 3/ 123.
   THC BCKGRD METER/RANGE/PPM                       1.3/ 3/  13.
   CO  SAMPLE METER/RANGE/PPM                      34.4/ 3/ 811.
   CO  BCKGRD METER/RANGE/PPM                        .3/ 3/   7.
   CO2 SAMPLE METER/RANGE/PCT                      35.4/ 3/ .5930
   CO2 BCKGRD METER/RANGE/PCT                       2.6/ 3/ .0397
   NOX SAMPLE METER/RANGE/PPM                      70.6/ 1/ 21.0
   NOX BCKGRD METER/RANGE/PPM                       2.8/ 1/    .8
   DILUTION FACTOR                                    19.59
   THC CONCENTRATION PPM                              111.
   CO  CONCENTRATION PPM                              779.
   CO2 CONCENTRATION PCT                              .5553
   NOX CONCENTRATION PPM                              20.2
   THC MASS GRAMS                                      6.87
   CO  MASS GRAMS                                     97.63
   CO2 MASS GRAMS                                    1094.2
   NOX MASS GRAMS                                      4.25
   RUN TIME                 SECONDS                   721.
        DFC, WET (DRY)                            .949 ( .930)
        SCF, WET (DRY)                           1.000 ( .975)
        VOL (SCM)                                    107.6
        SAM BLR (SCM)                                 0.00
        KM  (MEASURED)                                 .81

   TEST NUMBER,                                     958
   BAROMETER,               MM HG                    745.2
   HUMIDITY,                G/KG                      11.3
   TEMPERATURE,             DEG C                     23.3
   CARBON DIOXIDE,           G/KM                   1359.1  G/min      91.1
   FUEL CONSUMPTION,         L/100KM                  67.30  L/100min   4.54

   HYDROCARBONS, (THC)       G/KM                      8.53  G/min      0.57
   CARBON MONOXIDE,          G/KM                    120.53  G/min      8.12
   OXIDES OF NITROGEN,       G/KM                      5.28  G/min      0.35
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TABLE D-23. TEST NO. 961 EMISSION RESULTS

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                                        C IDLE- VEHICLE EMISSIONS RESULTS -BASELINE
                                                PROJECT 05-6619-004

TEST NO.   961      RUN   1                      VEHICLE NO.96                       TEST WEIGHT  1814. KG( 4000. LBS)
VEHICLE MODEL   78 CHEVROLET NOVA                DATE     8/25/82                    ACTUAL ROAD LOAD   7.8 KW( 10.5 HP)
ENGINE 4.1 L(250. CID)                           BAG CART NO.  1                     GASOLINE  EM-518-F
TRANSMISSION A3                                  DYNO NO.       3                    ODOMETER 93974. KM(58393. MILES)
                                                 CVS NO.   2

BAROMETER 743.20 MM HG(29.26 IN HG)              DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
RELATIVE HUMIDITY  66. PCT                       ABS. HUMIDITY 12.6 GM/KG            NOX HUMIDITY CORRECTION FACTOR  1.07
BAG RESULTS
   TEST CYCLE                                       C IDLE

   BLOWER DIF P MM. H2O(IN. H2O)                 774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)               774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)              43.3 (110.0)
   BLOWER REVOLUTIONS                               24053.
   TOT FLOW STD. CU. METRES(SCF)                  44.8 ( 1581.)
   THC SAMPLE METER/RANGE/PPM                    34.7/ 3/ 347.
   THC BCKGRD METER/RANGE/PPM                     1.5/ 3/  15.
   CO  SAMPLE METER/RANGE/PPM                    87.8/ 3/2447.
   CO  BCKGRD METER/RANGE/PPM                      .1/ 3/    2.
   CO2 SAMPLE METER/RANGE/PCT                    54.1/ 3/ .9467
   CO2 BCKGRD METER/RANGE/PCT                     3.3/ 3/ .0505
   NOX SAMPLE METER/RANGE/PPM                    40.1/ 2/ 40.1
   NOX BCKGRD METER/RANGE/PPM                     1.1/ 2/  1.1
   DILUTION FACTOR                                   11.02
   THC CONCENTRATION PPM                             333.
   CO  CONCENTRATION PPM                            2348.
   CO2 CONCENTRATION PCT                             .9007
   NOX CONCENTRATION PPM                             39.1
   THC MASS GRAMS                                     8.60
   CO  MASS GRAMS                                   122.37
   CO2 MASS GRAMS                                   738.2
   NOX MASS GRAMS                                     3.57
   RUN TIME                  SECONDS                300.
        DFC, WET (DRY)                           .909 ( .890)
        SCF, WET (DRY)                          1.000 ( .970)
        VOL (SCM)                                    44.8
        SAM BLR (SCM)                                0.00

   TEST NUMBER,                                     961
   BAROMETER,              MM HG                     743.2
   HUMIDITY,               G/KG                       12.6
   TEMPERATURE,            DEG C                      23.9
   CARBON DIOXIDE,          G/KM                     147.7
   FUEL CONSUMPTION,        L/100MIN                   8.18

   HYDROCARBONS, (THC)    G/MIN                        1.72
   CARBON MONOXIDE,       G/MIN                       24.48
   OXIDES OF NITROGEN,    G/MIN                         .71
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                                        H IDLE- VEHICLE EMISSIONS RESULTS -BASELINE
                                                PROJECT 05-6619-004

TEST NO.   961      RUN   1                      VEHICLE NO.96                       TEST WEIGHT  1814. KG( 4000. LBS)
VEHICLE MODEL   78 CHEVROLET NOVA                DATE     8/25/82                    ACTUAL ROAD LOAD   7.8 KW( 10.5 HP)
ENGINE 4.1 L(250. CID)                           BAG CART NO.  1                     GASOLINE  EM-518-F
TRANSMISSION A3                                  DYNO NO.       3                    ODOMETER 93979. KM(58396. MILES)
                                                 CVS NO.   2

BAROMETER 743.20 MM HG(29.26 IN HG)              DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
RELATIVE HUMIDITY  62. PCT                       ABS. HUMIDITY 11.9 GM/KG            NOX HUMIDITY CORRECTION FACTOR  1.04
BAG RESULTS
   TEST CYCLE                                       H IDLE

   BLOWER DIF P MM. H2O(IN. H2O)                 774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)               774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)              41.1 (106.0)
   BLOWER REVOLUTIONS                               24020.
   TOT FLOW STD. CU. METRES(SCF)                  44.9 ( 1585.)
   THC SAMPLE METER/RANGE/PPM                    88.9/ 2/  89.
   THC BCKGRD METER/RANGE/PPM                    11.9/ 2/  12.
   CO  SAMPLE METER/RANGE/PPM                     9.5/13/    9.
   CO  BCKGRD METER/RANGE/PPM                     3.6/13/    3.
   CO2 SAMPLE METER/RANGE/PCT                    23.3/ 3/ .3781
   CO2 BCKGRD METER/RANGE/PCT                     3.2/ 3/ .0490
   NOX SAMPLE METER/RANGE/PPM                     3.1/ 2/  3.1
   NOX BCKGRD METER/RANGE/PPM                     1.1/ 2/  1.1
   DILUTION FACTOR                                   34.55
   THC CONCENTRATION PPM                             77.
   CO  CONCENTRATION PPM                              5.
   CO2 CONCENTRATION PCT                             .3306
   NOX CONCENTRATION PPM                             2.0
   THC MASS GRAMS                                     2.00
   CO  MASS GRAMS                                      .27
   CO2 MASS GRAMS                                   271.6
   NOX MASS GRAMS                                      .18
   RUN TIME                  SECONDS                300.
        DFC, WET (DRY)                           .971 ( .951)
        SCF, WET (DRY)                          1.000 ( .976)
        VOL (SCM)                                    44.9
        SAM BLR (SCM)                                0.00

   TEST NUMBER,                                     961
   BAROMETER,              MM HG                     743.2
   HUMIDITY,               G/KG                       11.9
   TEMPERATURE,            DEG C                      23.9
   CARBON DIOXIDE,          G/ MIN                    54.3
   FUEL CONSUMPTION,        L/100 MIN                  2.38

   HYDROCARBONS, (THC)    G/MIN                         .40
   CARBON MONOXIDE,       G/MIN                         .05
   OXIDES OF NITROGEN,    G/MIN                         .04
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D-23 (Cont'd). TEST NO. 961 EMISSION RESULTS

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                                             C NYCC- VEHICLE EMISSIONS RESULTS -BASELINE
                                                     PROJECT 05-6619-004

TEST NO.   961      RUN   1                     VEHICLE NO.96                      TEST WEIGHT  1814. KG( 4000. LBS)
VEHICLE MODEL   78 CHEVROLET NOVA               DATE    8/25/82                    ACTUAL ROAD LOAD   7.8 KW( 10.5 HP)
ENGINE 4.1 L(250. CID)                          BAG CART NO.  1                    GASOLINE  EM-518-F
TRANSMISSION A3                                 DYNO NO.      3                    ODOMETER 93992. KM(58404. MILES)
                                                CVS NO.   2

BAROMETER 742.44 MM HG(29.23 IN HG)             DRY BULB TEMP. 22.8 DEG C(73.0 DEG F)
RELATIVE HUMIDITY  61. PCT                      ABS. HUMIDITY 10.9 GM/KG           NOX HUMIDITY CORRECTION FACTOR  1.01
BAG RESULTS
  TEST CYCLE                                      C NYCC

  BLOWER DIF P MM. H2O(IN. H2O)                774.7 (30.5)
  BLOWER INLET P MM. H2O(IN. H2O)              774.7 (30.5)
  BLOWER INLET TEMP. DEG. C(DEG. F)             41.7 (107.0)
  BLOWER REVOLUTIONS                              57846.
  TOT FLOW STD. CU. METRES(SCF)                107.9 ( 3808.)
  THC SAMPLE METER/RANGE/PPM                   18.9/ 3/ 189.
  THC BCKGRD METER/RANGE/PPM                    1.1/ 3/  11.
  CO  SAMPLE METER/RANGE/PPM                   25.3/ 3/ 587.
  CO  BCKGRD METER/RANGE/PPM                     .1/ 3/   2.
  CO2 SAMPLE METER/RANGE/PCT                   36.0/ 3/ .6040
  CO2 BCKGRD METER/RANGE/PCT                    3.0/ 3/ .0459
  NOX SAMPLE METER/RANGE/PPM                   14.1/ 2/ 14.1
  NOX BCKGRD METER/RANGE/PPM                    1.3/ 2/  1.3
  DILUTION FACTOR                                  19.72
  THC CONCENTRATION PPM                            179.
  CO  CONCENTRATION PPM                            566.
  CO2 CONCENTRATION PCT                            .5604
  NOX CONCENTRATION PPM                            12.9
  THC MASS GRAMS                                   11.10
  CO  MASS GRAMS                                   71.06
  CO2 MASS GRAMS                                 1106.6
  NOX MASS GRAMS                                    2.67
  RUN TIME              SECONDS                   721.
      DFC, WET (DRY)                            .949 ( .930)
      SCF, WET (DRY)                           1.000 ( .975)
      VOL (SCM)                                   107.9
      SAM BLR (SCM)                                 0.00
      KM  (MEASURED)                                 .81

  TEST NUMBER,                                 961
  BAROMETER,            MM HG                   742.4
  HUMIDITY,             G/KG                     10.9
  TEMPERATURE,          DEG C                    22.8
  CARBON DIOXIDE,        G/KM                  1373.3      G/MIN          92.1
  FUEL CONSUMPTION,     L/100KM                  66.40     L/100 MIN       4.48

  HYDROCARBONS, (THC)   G/KM                     13.78     G/MIN           0.92
  CARBON MONOXIDE,      G/KM                     88.19     G/MIN           5.91
  OXIDES OF NITROGEN,   G/KM                      3.32     G/MIN           0.22

                                             H NYCC- VEHICLE EMISSIONS RESULTS -BASELINE
                                                     PROJECT 05-6619-004

TEST NO.   961      RUN   1                     VEHICLE NO.96                      TEST WEIGHT  1814. KG( 4000. LBS)
VEHICLE MODEL   78 CHEVROLET NOVA               DATE    8/25/82                    ACTUAL ROAD LOAD   7.8 KW( 10.5 HP)
ENGINE 4.1 L(250. CID)                          BAG CART NO.  1                    GASOLINE  EM-518-F
TRANSMISSION A3                                 DYNO NO.      3                    ODOMETER 93984. KM(58399. MILES)
                                                CVS NO.   2

BAROMETER 743.46 MM HG(29.27 IN HG)             DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)
RELATIVE HUMIDITY  63. PCT                      ABS. HUMIDITY 12.4 GM/KG           NOX HUMIDITY CORRECTION FACTOR  1.06
BAG RESULTS
  TEST CYCLE                                      H NYCC

  BLOWER DIF P MM. H2O(IN. H2O)                774.7 (30.5)
  BLOWER INLET P MM. H2O(IN. H2O)              774.7 (30.5)
  BLOWER INLET TEMP. DEG. C(DEG. F)             39.4 (103.0)
  BLOWER REVOLUTIONS                              57800.
  TOT FLOW STD. CU. METRES(SCF)                108.4 ( 3827.)
  THC SAMPLE METER/RANGE/PPM                   85.6/ 2/  86.
  THC BCKGRD METER/RANGE/PPM                   10.9/ 2/  11.
  CO  SAMPLE METER/RANGE/PPM                   15.9/13/  14.
  CO  BCKGRD METER/RANGE/PPM                    3.0/ 3/   3.
  CO2 SAMPLE METER/RANGE/PCT                   31.1/ 3/ .5153
  CO2 BCKGRD METER/RANGE/PCT                    2.9/ 3/ .0444
  NOX SAMPLE METER/RANGE/PPM                    7.5/ 2/  7.5
  NOX BCKGRD METER/RANGE/PPM                    1.4/ 2/  1.4
  DILUTION FACTOR                                  25.51
  THC CONCENTRATION PPM                            75.
  CO  CONCENTRATION PPM                            11.
  CO2 CONCENTRATION PCT                            .4727
  NOX CONCENTRATION PPM                            6.2
  THC MASS GRAMS                                   4.69
  CO  MASS GRAMS                                   1.44
  CO2 MASS GRAMS                                  937.9
  NOX MASS GRAMS                                   1.35
  RUN TIME              SECONDS                   722.
      DFC, WET (DRY)                            .961 ( .941)
      SCF, WET (DRY)                           1.000 ( .975)
      VOL (SCM)                                   108.4
      SAM BLR (SCM)                                 0.00
      KM  (MEASURED)                                 .80

  TEST NUMBER,                                 961
  BAROMETER,            MM HG                   743.5
  HUMIDITY,             G/KG                     12.4
  TEMPERATURE,          DEG C                    24.4
  CARBON DIOXIDE,        G/KM                  1167.0      G/MIN          77.9
  FUEL CONSUMPTION,     L/100KM                  50.72     L/100 MIN       3.37

  HYDROCARBONS, (THC)   G/KM                      5.84     G/MIN           0.39
  CARBON MONOXIDE,      G/KM                      1.80     G/MIN           0.12
  OXIDES OF NITROGEN,   G/KM                      1.68     G/MIN           0.11
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TABLE D-24. TEST NO. 962 EMISSION RESULTS

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                                              C IDLE- VEHICLE EMISSIONS RESULTS -BASELINE
                                                   PROJECT 05-6619-004

TEST NO.   962       RUN   1                        VEHICLE NO.96                     TEST WEIGHT  1814. KG( 4000. LBS)
VEHICLE MODEL   78 CHEVROLET NOVA                   DATE     8/26/82                  ACTUAL ROAD LOAD   7.8 KW( 10.5 HP)
ENGINE 4.1 L(250. CID)                              BAG CART NO.  1                   GASOLINE  EM-518-F
TRANSMISSION A3                                     DYNO NO.      3                   ODOMETER 94000. KM(58409. MILES)
                                                    CVS NO.   2

BAROMETER 742.95 MM HG(29.25 IN HG)                 DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)
RELATIVE HUMIDITY  63. PCT                          ABS. HUMIDITY 12.4 GM/KG          NOX HUMIDITY CORRECTION FACTOR  1.06
BAG RESULTS
   TEST CYCLE                                           C IDLE

   BLOWER DIF P MM. H2O(IN. H2O)                    774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)                  774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)                 43.3 (110.0)
   BLOWER REVOLUTIONS                                 24117.
   TOT FLOW STD. CU. METRES(SCF)                     44.9 ( 1584.)
   THC SAMPLE METER/RANGE/PPM                       68.8/ 3/ 688.
   THC BCKGRD METER/RANGE/PPM                        1.3/ 3/  13.
   CO  SAMPLE METER/RANGE/PPM                       95.5/ 3/2752.
   CO  BCKGRD METER/RANGE/PPM                         .2/ 3/   5.
   CO2 SAMPLE METER/RANGE/PCT                       52.8/ 3/ .9213
   CO2 BCKGRD METER/RANGE/PCT                        2.6/ 3/ .0397
   NOX SAMPLE METER/RANGE/PPM                       42.1/ 2/ 42.1
   NOX BCKGRD METER/RANGE/PPM                        1.5/ 2/  1.5
   DILUTION FACTOR                                     10.68
   THC CONCENTRATION PPM                               676.
   CO  CONCENTRATION PPM                              2644.
   CO2 CONCENTRATION PCT                               .8853
   NOX CONCENTRATION PPM                               40.7
   THC MASS GRAMS                                      17.50
   CO  MASS GRAMS                                     138.10
   CO2 MASS GRAMS                                      727.3
   NOX MASS GRAMS                                       3.70
   RUN TIME              SECONDS                       300.
        DFC, WET (DRY)                              .906 ( .888)
        SCF, WET (DRY)                             1.000 ( .971)
        VOL (SCM)                                       44.9
        SAM BLR (SCM)                                   0.00

   TEST NUMBER,                                     962
   BAROMETER,             MM HG                      743.0
   HUMIDITY,              G/KG                        12.4
   TEMPERATURE,           DEG C                       24.4
   CARBON DIOXIDE,         G/MIN                     145.5
   FUEL CONSUMPTION,       L/100MIN                    8.54

   HYDROCARBONS, (THC)     G/MIN                       3.50
   CARBON MONOXIDE,        G/MIN                      27.62
   OXIDES OF NITROGEN,     G/MIN                        .74

                                              H IDLE- VEHICLE EMISSIONS RESULTS -BASELINE
                                                   PROJECT 05-6619-004

TEST NO.   962       RUN   1                        VEHICLE NO.96                     TEST WEIGHT  1814. KG( 4000. LBS)
VEHICLE MODEL   78 CHEVROLET NOVA                   DATE     8/26/82                  ACTUAL ROAD LOAD   7.8 KW( 10.5 HP)
ENGINE 4.1 L(250. CID)                              BAG CART NO.  1                   GASOLINE  EM-518-F
TRANSMISSION A3                                     DYNO NO.      3                   ODOMETER 94003. KM(58411. MILES)
                                                    CVS NO.   2

BAROMETER 742.95 MM HG(29.25 IN HG)                 DRY BULB TEMP. 22.8 DEG C(73.0 DEG F)
RELATIVE HUMIDITY  69. PCT                          ABS. HUMIDITY 12.4 GM/KG          NOX HUMIDITY CORRECTION FACTOR  1.06
BAG RESULTS
   TEST CYCLE                                           H IDLE

   BLOWER DIF P MM. H2O(IN. H2O)                    774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)                  774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)                 40.0 (104.0)
   BLOWER REVOLUTIONS                                 24041.
   TOT FLOW STD. CU. METRES(SCF)                     45.0 ( 1589.)
   THC SAMPLE METER/RANGE/PPM                       88.0/ 2/  88.
   THC BCKGRD METER/RANGE/PPM                       10.9/ 2/  11.
   CO  SAMPLE METER/RANGE/PPM                       13.8/13/  12.
   CO  BCKGRD METER/RANGE/PPM                        4.1/13/   4.
   CO2 SAMPLE METER/RANGE/PCT                       26.6/ 3/ .4355
   CO2 BCKGRD METER/RANGE/PCT                        2.4/ 3/ .0367
   NOX SAMPLE METER/RANGE/PPM                        3.9/ 2/  3.9
   NOX BCKGRD METER/RANGE/PPM                        1.3/ 2/  1.3
   DILUTION FACTOR                                     30.07
   THC CONCENTRATION PPM                                77.
   CO  CONCENTRATION PPM                                 9.
   CO2 CONCENTRATION PCT                               .4001
   NOX CONCENTRATION PPM                                2.6
   THC MASS GRAMS                                       2.01
   CO  MASS GRAMS                                        .45
   CO2 MASS GRAMS                                      329.6
   NOX MASS GRAMS                                        .24
   RUN TIME              SECONDS                       300.
        DFC, WET (DRY)                              .967 ( .945)
        SCF, WET (DRY)                             1.000 ( .974)
        VOL (SCM)                                       45.0
        SAM BLR (SCM)                                   0.00

   TEST NUMBER,                                     962
   BAROMETER,             MM HG                      743.0
   HUMIDITY,              G/KG                        12.4
   TEMPERATURE,           DEG C                       22.8
   CARBON DIOXIDE,         G/MIN                      65.9
   FUEL CONSUMPTION,       L/100MIN                    2.87

   HYDROCARBONS, (THC)     G/MIN                        .40
   CARBON MONOXIDE,        G/MIN                        .09
   OXIDES OF NITROGEN,     G/MIN                        .05
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TABLE D-24 (Cont'd). TEST NO. 962 EMISSION RESULTS

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                                         C NYCC- VEHICLE EMISSIONS RESULTS -BASELINE
                                                PROJECT 05-6619-004

TEST NO.   962      RUN   1                  VEHICLE NO.96                       TEST WEIGHT  1814. KG( 4000. LBS)
VEHICLE MODEL   78 CHEVROLET NOVA            DATE    8/26/82                     ACTUAL ROAD LOAD   7.8 KW( 10.5 HP)
ENGINE 4.1 L(250. CID)                       BAG CART NO.  1                     GASOLINE  EM-518-F
TRANSMISSION A3                              DYNO NO.      3                     ODOMETER 94016. KM(58419. MILES)
                                             CVS NO.   2

BAROMETER 740.66 MM HG(29.16 IN HG)          DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)
RELATIVE HUMIDITY  56. PCT                   ABS. HUMIDITY 10.9 GM/KG            NOX HUMIDITI CORRECTION FACTOR  1.01
BAG RESULTS
   TEST CYCLE                                   C NYCC

   BLOWER DIF P MM. H2O(IN. H2O)             774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)           774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)          42.2 (108.0)
   BLOWER REVOLUTIONS                           57879.
   TOT FLOW STD. CU. METRES(SCF)             107.5 ( 3796.)
   THC SAMPLE METER/RANGE/PPM                26.6/ 3/ 266.
   THC BCKGRD METER/RANGE/PPM                 1.3/ 3/  13.
   CO  SAMPLE METER/RANGE/PPM                80.7/11/ 368.
   CO  BCKGRD METER/RANGE/PPM                 1.0/11/   3.
   CO2 SAMPLE METER/RANGE/PCT                34.6/ 3/ .5784
   CO2 BCKGRD METER/RANGE/PCT                 3.0/ 3/ .0459
   NOX SAMPLE METER/RANGE/PPM                14.3/ 2/ 14.3
   NOX BCKGRD METER/RANGE/PPM                 1.5/ 2/  1.5
   DILUTION FACTOR                               20.91
   THC CONCENTRATION PPM                         294.
   CO  CONCENTRATION PPM                         354.
   CO2 CONCENTRATION PCT                         .5347
   NOX CONCENTRATION PPM                         12.9
   THC MASS GRAMS                                15.72
   CO  MASS GRAMS                                44.32
   CO2 MASS GRAMS                              1052.6
   NOX MASS GRAMS                                2.67
   RUN TIME                  SECONDS             722
        DFC, WET (DRY)                        .952 ( .935)
        SCF, WET (DRY)                       1.000 ( .977)
        VOL (SCM)                              107.5
        SAM BLR (SCM)                            0.00
        KM  (MEASURED)                           .82

   TEST NUMBER,                                962
   BAROMETER,              MM HG                740.7
   HUMIDITY,               G/KG                  10.9
   TEMPERATURE,            DEG C                 24.4
   CARBON DIOXIDE,          G/KM               1290.9      G/MIN          87.5
   FUEL CONSUMPTION,       L/100KM               61.36      L/100 MIN       4.18

   HYDROCARBONS, (THC)     G/KM                  19.28      G/MIN           1.31
   CARBON MONOXIDE,        G/KM                  54.36      G/MIN           3.68
   OXIDES OF NITROGEN,     G/KM                   3.27      G/MIN           0.22

                                         H NYCC- VEHICLE EMISSIONS RESULTS -BASELINE
                                                PROJECT 05-6619-004

TEST NO.   962      RUN   1                  VEHICLE NO.96                       TEST WEIGHT  1814. KG( 4000. LBS)
VEHICLE MODEL   78 CHEVROLET NOVA            DATE    8/26/82                     ACTUAL ROAD LOAD   7.8 KW( 10.5 HP)
ENGINE 4.1 L(250. CID)                       BAG CART NO.  1                     GASOLINE  EM-518-F
TRANSMISSION A3                              DYNO NO.      3                     ODOMETEH 94010. KM(58415. MILES)
                                             CVS NO.   2

BAROMETER 743.20 MM HG(29.26 IN HG)          DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)
RELATIVE HUMIDITY  70. PCT                   ABS. HUMIDITY 12.9 GM/KG            NOX HUMIDITY CORRECTION FACTOR  1.08
BAG RESULTS
   TEST CYCLE                                   H NYCC

   BLOWER DIF P MM. H2O(IN. H2O)             774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)           774.7 (30.5)
   BLOWEP INLET TEMP. DEG. C(DEG. F)          39.4 (103.0)
   BLOWER REVOLUTIONS                           57738.
   TOT FLOW STD. CU. METRES(SCF)             108.2 ( 3821.)
   THC SAMPLE METER/RANGE/PPM                84.7/ 2/  85.
   THC BCKGRD METER/RANGE/PPM                11.0/ 2/  11.
   CO  SAMPLE METER/RANGE/PPM                19.3/13/  18.
   CO  BCKGRD METER/RANGE/PPM                 3.3/13/   3.
   CO2 SAMPLE METER/RANGE/PCT                30.5/ 3/ .5046
   CO2 BCKGRD METER/RANGE/PCT                 2.5/ 3/ .0382
   NOX SAMPLE METER/RANGE/PPM                 7.9/ 2/  7.9
   NOX BCKGRD METER/RANGE/PPM                 1.4/ 2/  1.4
   DILUTION FACTOR                               26.03
   THC CONCENTRATION PPM                         74.
   CO  CONCENTRATION PPM                         14.
   CO2 CONCENTRATION PCT                         .4678
   NOX CONCENTRATION PPM                         6.6
   THC MASS GRAMS                                4.63
   CO  MASS GRAMS                                1.79
   CO2 MASS GRAMS                               927.0
   NOX MASS GRAMS                                1.46
   RUN TIME                  SECONDS             721.
        DFC, WET (DRY)                        .962 ( .940)
        SCF, WET (DRY)                       1.000 ( .973)
        VOL (SCM)                              108.2
        SAM BLR (SCM)                            0.00
        KM  (MEASURED)                           .81

   TEST NUMBER,                                962
   BAROMETER,              MM HG                743.2
   HUMIDITY,               G/KG                  12.9
   TEMPERATURE,            DEG C                 23.3
   CARBON DIOXIDE,          G/KM               1143.6      G/MIN          77.1
   FUEL CONSUMPTION,       L/100KM               49.73      L/100 MIN       3.35

   HYDROCARBONS, (THC)     G/KM                   5.71      G/MIN           0.39
   CARBON MONOXIDE,        G/KM                   2.21      G/MIN           0.15
   OXIDES OF NITROGEN,     G/KM                   1.80      G/MIN           0.12
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TABLE D-25. TEST NO. 963 EMISSION RESULTS

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                                          C IDLE- VEHICLE EMISSIONS RESULTS -
                                               PROJECT 05-6619-004

TEST NO.  963      RUN   1                     VEHICLE NO.96                          TEST WEIGHT  1814. KG( 4000. LBS)
VEHICLE MODEL   78 CHEVROLET NOVA              DATE     8/31/82                       ACTUAL ROAD LOAD   7.8 KW( 10.5 HP)
ENGINE 4.1 L(250. CID)                         BAG CART NO.  1                        GASOLINE  EM-518-F
TRANSMISSION A3                                DYNO NO.      3                        ODOMETER 94071. KM(58453. MILES)
                                               CVS NO.   2

BAROMETER 744.47 MM HG(29.31 IN HG)            DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
RELATIVE HUMIDITY  66. PCT                     ABS. HUMIDITY 12.6 GM/KG               NOX HUMIDITY CORRECTION FACTOR  1.07
BAG RESULTS
   TEST CYCLE                                     C IDLE

   BLOWER DIF P MM. H2O(IN. H2O)               774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)             774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)            43.3 (110.0)
   BLOWER REVOLUTIONS                             24116.
   TOT FLOW STD. CU. METRES(SCF)                45.0 ( 1588.)
   THC SAMPLE METER/RANGE/PPM                  76.1/ 3/ 761.
   THC BCKGRD METER/RANGE/PPM                   1.6/ 3/  16.
   CO  SAMPLE METER/RANGE/PPM                  95.3/ 3/2744.
   CO  BCKGRD METER/RANGE/PPM                    .2/ 3/   5.
   CO2 SAMPLE METER/RANGE/PCT                  50.9/ 3/ .8845
   CO2 BCKGRD METER/RANGE/PCT                   2.7/ 3/ .0413
   NOX SAMPLE METER/RANGE/PPM                  47.4/ 2/ 47.4
   NOX BCKGRD METER/RANGE/PPM                   1.2/ 2/  1.2
   DILUTION FACTOR                                10.94
   THC CONCENTRATION PPM                          746.
   CO  CONCENTRATION PPM                         2635.
   CO2 CONCENTRATION PCT                          .8470
   NOX CONCENTRATION PPM                          46.3
   THC MASS GRAMS                                 19.36
   CO  MASS GRAMS                                137.93
   CO2 MASS GRAMS                                 697.3
   NOX MASS GRAMS                                  4.24
   RUN TIME              SECONDS                  300.
        DFC, WET (DRY)                          .909 ( .889)
        SCF, WET (DRY)                         1.000 ( .970)
        VOL (SCM)                                 45.0
        SAM BLR (SCM)                             0.00


   TEST NUMBER,                                 962
   BAROMETER,           MM HG                    744.5
   HUMIDITY,            G/KG                      12.6
   TEMPERATURE,         DEG C                     23.9
   CARBON DIOXIDE,       G/ MIN                  139.5
   FUEL CONSUMPTION,     L/100 MIN                 8.33

   HYDROCARBONS, (THC)   G/ MIN                    3.87
   CARBON MONOXIDE,      G/ MIN                   27.59
   OXIDES OF NITROGEN,   G/ MIN                     .85
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TABLE D-26. TEST NO. 966 EMISSION RESULTS

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                                                    C IDLE- VEHICLE EMISSIONS RESULTS - R.B.I.
                                                              PROJECT 05-6619-004

TEST NO.   966       RUN   1                             VEHICLE NO.96                        TEST WEIGHT  1814. KG( 4000. LBS)
VEHICLE MODEL   78 CHEVROLET NOVA                        DATE    8/27/82                      ACTUAL ROAD LOAD   7.8 KW( 10.5 HP)
ENGINE 4.1 L(250. CID)                                   BAG CART NO.  1                      GASOLINE  EM-518-F
TRANSMISSION A3                                          DYNO NO.      3                      ODOMETER 94023. KM(58423. MILES)
                                                         CVS NO.   2

BAROMETER 741.17 MM HG(29.18 IN HG)                      DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
RELATIVE HUMIDITY  62. PCT                               ABS. HUMIDITY 11.9 GM/KG             NOX HUMIDITY CORRECTION FACTOR  1.04
BAG RESULTS
   TEST CYCLE                                               C IDLE

   BLOWER DIF P MM. H2O(IN. H2O)                        774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)                      774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)                     43.3 (110.0)
   BLOWER REVOLUTIONS                                      24108.
   TOT FLOW STD. CU. METRES(SCF)                         44.7 ( 1579.)
   THC SAMPLE METER/RANGE/PPM                           35.3/ 3/ 353.
   THC BCKGRD METER/RANGE/PPM                            1.5/ 3/  15.
   CO  SAMPLE METER/RANGE/PPM                           86.3/ 3/2390.
   CO  BCKGRD METER/RANGE/PPM                             .2/ 3/   5.
   CO2 SAMPLE METER/RANGE/PCT                           53.7/ 3/ .9389
   CO2 BCKGRD METER/RANGE/PCT                            2.7/ 3/ .0413
   NOX SAMPLE METER/RANGE/PPM                           49.9/ 2/ 49.9
   NOX BCKGRD METER/RANGE/PPM                            1.8/ 2/  1.8
   DILUTION FACTOR                                          11.13
   THC CONCENTRATION PPM                                   339.
   CO  CONCENTRATION PPM                                  2295.
   CO2 CONCENTRATION PCT                                   .9013
   NOX CONCENTRATION PPM                                   48.3
   THC MASS GRAMS                                           8.75
   CO  MASS GRAMS                                         119.50
   CO2 MASS GRAMS                                         738.1
   NOX MASS GRAMS                                           4.30
   RUN TIME              SECONDS                          300.
         DFC, WET (DRY)                                 .910 ( .892)
         SCF, WET (DRY)                                1.000 ( .971)
         VOL (SCM)                                         44.7
         SAM BLR (SCM)                                      0.00


   TEST NUMBER,                                           966
   BAROMETER,            MM HG                            741.2
   HUMIDITY,             G/KG                              11.9
   TEMPERATURE,          DEG C                             23.9
   CARBON DIOXIDE,        G/MIN                           147.7
   FUEL CONSUMPTION,      L/100 MIN                         8.14

   HYDROCARBONS, (THC)    G/ MIN                            1.75
   CARBON MONOXIDE,       G/ MIN                           23.91
   OXIDES OF NITROGEN,    G/ MIN                             .86
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                                                    H IDLE- VEHICLE EMISSIONS RESULTS - R.B.I.
                                                              PROJECT 05-6619-004

TEST NO.   966       RUN   1                             VEHICLE NO.96                        TEST WEIGHT  1814. KG( 4000. LBS)
VEHICLE MODEL   78 CHEVROLET NOVA                        DATE    8/27/82                      ACTUAL ROAD LOAD   7.8 KW( 10.5 HP)
ENGINE 4.1 L(250. CID)                                   BAG CART NO.  1                      GASOLINE  EM-518-F
TRANSMISSION A3                                          DYNO NO.      3                      ODOMETER 94028. KM(58426. MILES)
                                                         CVS NO.   2

BAROMETER 741.17 MM HG(29.18 IN HG)                      DRY BULB TEMP. 23.3 DEG C(74.0 DEG F)
RELATIVE HUMIDITY  62. PCT                               ABS. HUMIDITY 11.4 GM/KG             NOX HUMIDITY CORRECTION FACTOR  1.02
BAG RESULTS
   TEST CYCLE                                               H IDLE

   BLOWER DIF P MM. H2O(IN. H2O)                        774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)                      774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)                     42.2 (108.0)
   BLOWER REVOLUTIONS                                      24034.
   TOT FLOW STD. CU. METRES(SCF)                         44.7 ( 1578.)
   THC SAMPLE METER/RANGE/PPM                           62.4/ 2/  62.
   THC BCKGRD METER/RANGE/PPM                           11.3/ 2/  11.
   CO  SAMPLE METER/RANGE/PPM                           10.0/13/   9.
   CO  BCKGRD METER/RANGE/PPM                            2.5/13/   2.
   CO2 SAMPLE METER/RANGE/PCT                           29.1/ 3/ .4796
   CO2 BCKGRD METER/RANGE/PCT                            2.8/ 3/ .0428
   NOX SAMPLE METER/RANGE/PPM                            5.9/ 2/  5.9
   NOX BCKGRD METER/RANGE/PPM                            1.4/ 2/  1.4
   DILUTION FACTOR                                          27.53
   THC CONCENTRATION PPM                                    52.
   CO  CONCENTRATION PPM                                     7.
   CO2 CONCENTRATION PCT                                   .4384
   NOX CONCENTRATION PPM                                    4.6
   THC MASS GRAMS                                           1.33
   CO  MASS GRAMS                                            .35
   CO2 MASS GRAMS                                         358.6
   NOX MASS GRAMS                                            .40
   RUN TIME              SECONDS                          300.
         DFC, WET (DRY)                                 .964 ( .944)
         SCF, WET (DRY)                                1.000 ( .976)
         VOL (SCM)                                         44.7
         SAM BLR (SCM)                                      0.00
         KM  (MEASURED)                                     5.00

   TEST NUMBER,                                           966
   BAROMETER,            MM HG                            741.2
   HUMIDITY,             G/KG                              11.4
   TEMPERATURE,          DEG C                             23.3
   CARBON DIOXIDE,        G/MIN                            71.7
   FUEL CONSUMPTION,      L/100 MIN                         3.10

   HYDROCARBONS, (THC)    G/ MIN                             .27
   CARBON MONOXIDE,       G/ MIN                             .07
   OXIDES OF NITROGEN,    G/ MIN                             .08
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TABLE D-26 (Cont'd). TEST NO. 966 EMISSION RESULTS

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                                        C NYCC- VEHICLE EMISSIONS RESULTS -
                                             PROJECT 05-6619-004

TEST NO.   966      RUN   1                     VEHICLE NO.96                   TEST WEIGHT  1814. KG( 4000. LBS)
VEHICLE MODEL   78 CHEVFOLET NOVA               DATE    8/27/82                 ACTUAL ROAD LOAD   7.8 KW( 10.5 HP)
ENGINE 4.1 L(250. CID)                          BAG CART NO   1                 GASOLINE  EM-518-F
TRANSMISSION A3                                 DYNO NO.      3                 ODOMETER 94040. KM(58434. MILES)
                                                CVS NO.   2

BAROMETER 738.63 MM HG(29.08 IN HG)             DRY BULB TEMP. 22.8 DEG C(73.0 DEG F)
RELATIVE HUMIDITY  61. PCT                      ABS. HUMIDITY 11.0 GM/KG        NOX HUMIDITY CORRECTION FACTOR  1.01
BAG RESULTS
   TEST CYCLE                                     C NYCC

   BLOWER DIF P MM. H2O(IN. H2O)                774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)              774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)             42.2 (108.0)
   BLOWER REVOLUTIONS                              57821.
   TOT FLOW STD. CU. METRES(SCF)                107.1 ( 3781.)
   THC SAMPLE METER/RANGE/PPM                   16.0/ 3/ 160.
   THC BCKGRD METER/RANGE/PPM                    1.0/ 3/  10.
   CO  SAMPLE METER/RANGE/PPM                   96.2/11/ 498.
   CO  BCKGRD METER/RANGE/PPM                     .7/11/   2.
   CO2 SAMPLE METER/RANGE/PCT                   37.3/ 3/ .6278
   CO2 BCKGRD METER/RANGE/PCT                    2.7/ 3/ .0413
   NOX SAMPLE METER/RANGE/PPM                   18.9/ 2/ 18.9
   NOX BCKGRD METER/RANGE/PPM                    1.4/ 2/  1.4
   DILUTION FACTOR                                 19.36
   THC CONCENTRATION PPM                           151.
   CO  CONCENTRATION PPM                           480.
   CO2 CONCENTRATION PCT                           .5887
   NOX CONCENTRATION PPM                           17.6
   THC MASS GRAMS                                   9.29
   CO  MASS GRAMS                                  59.86
   CO2 MASS GRAMS                                 1154.0
   NOX MASS GRAMS                                   3.63
   RUN TIME              SECONDS                   721.
        DFC, WET (DRY)                           .948 ( .930)
        SCF, WET (DRY)                          1.000 ( .974)
        VOL (SCM)                                  107.1
        SAM BLR (SCM)                               0.00
        KM  (MEASURED)                               .81

   TEST NUMBER,                                   966
   BAROMETER,            MM HG                     738.6
   HUMIDITY,             G/KG                       11.0
   TEMPERATURE,          DEG C                      22.8
   CARBON DIOXIDE,        G/KM                    1421.3      G/MIN        96.0
   FUEL CONSUMPTION,      L/100KM                   67.16     L/100 MIN     4.53

   HYDROCARBONS, (THC)   G/KM                       11.45     G/MIN         0.77
   CARBON MONOXIDE,      G/KM                       73.73     G/MIN         4.98
   OXIDES OF NITROGEN,   G/KM                        4.47     G/MIN         0.30
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                                       H NYCC- VEHICLE EMISSIONS RESULTS - R.B.I.
                                            PROJECT 05-6619-004

TEST NO.   966      RUN   1                     VEHICLE NO.96                   TEST WEIGHT  1814. KG( 4000. LBS)
VEHICLE MODEL   78 CHEVROLET NOVA               DATE    8/27/82                 ACTUAL ROAD LOAD   7.8 KW( 10.5 HP)
ENGINE 4.1 L(250. CID)                          BAG CART NO.  1                 GASOLINE  EM-518-F
TRANSMISSION A3                                 DYNO NO.      3                 ODOMETER 94034. KM(58430. MILES)
                                                CVS NO.   2

BAROMETER 740.92 MM HG(29.17 IN HG)             DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)
RELATIVE HUMIDITY  59. PCT                      ABS. HUMIDITY 11.7 GM/KG        NOX HUMIDITY CORRECTION FACTOR  1.03
BAG RESULTS
   TEST CYCLE                                     H NYCC

   BLOWER DIF P MM. H2O(IN. H2O)                774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)              774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)             39.4 (103.0)
   BLOWER REVOLUTIONS                              57744.
   TOT FLOW STD. CU. METRES(SCF)                107.9 ( 3809.)
   THC SAMPLE METER/RANGE/PPM                   60.5/ 2/  61.
   THC BCKGRD METER/RANGE/PPM                   10.9/ 2/  11.
   CO  SAMPLE METER/RANGE/PPM                   16.6/13/  15.
   CO  BCKGRD METER/RANGE/PPM                    2.4/13/   2.
   CO2 SAMPLE METER/RANGE/PCT                   33.5/ 3/ .5585
   CO2 BCKGRD METER/RANGE/PCT                    2.6/ 3/ .0397
   NOX SAMPLE METER/RANGE/PPM                   10.6/ 2/ 10.6
   NOX BCKGRD METER/RANGE/PPM                    1.5/ 2/  1.5
   DILUTION FACTOR                                 23.67
   THC CONCENTRATION PPM                           50.
   CO  CONCENTRATION PPM                           13.
   CO2 CONCENTRATION PCT                           .5204
   NOX CONCENTRATION PPM                           9.2
   THC MASS GRAMS                                   3.11
   CO  MASS GRAMS                                   1.58
   CO2 MASS GRAMS                                 1027.7
   NOX MASS GRAMS                                   1.95
   RUN TIME              SECONDS                   721.
        DFC, WET (DRY)                           .958 ( .939)
        SCF, WET (DRY)                          1.000 ( .976)
        VOL (SCM)                                  107.9
        SAM BLR (SCM)                               0.00
        KM  (MEASURED)                               .79

   TEST NUMBER,                                   966
   BAROMETER,            MM HG                     740.9
   HUMIDITY,             G/KG                       11.7
   TEMPERATURE,          DEG C                      24.4
   CARBON DIOXIDE,        G/KM                    1302.2      G/MIN        85.5
   FUEL CONSUMPTION,      L/100KM                   56.25     L/100MIN      3.70

   HYDROCARBONS, (THC)   G/KM                        3.94     G/MIN         0.26
   CARBON MONOXIDE,      G/KM                        2.00     G/MIN         0.13
   OXIDES OF NITROGEN,   G/KM                        2.47     G/MIN         0.16
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TABLE D-27. TEST NO. 967 EMISSION RESULTS

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                                             C NYCC- VEHICLE EMISSIONS RESULTS -
                                                  PROJECT 05-6619-004

TEST NO.   967       RUN   1                     VEHICLE NO.96                    TEST WEIGHT  1814. KG( 4000. LBS)
VEHICLE MODEL   78 CHEVROLET NOVA                DATE      8/30/82                ACTUAL ROAD LOAD   7.8 KW( 10.5 HP)
ENGINE 4.1 L(250. CID)                           BAG CART NO.  1                  GASOLINE  EM-518-F
TRANSMISSION A3                                  DYNO NO.      3                  ODOMETER 94065. KM(58449. MILES)
                                                 CVS NO.   2

BAROMETER 740.66 MM HG(29.16 IN HG)              DRY BULB TEMP. 25.0 DEG C(77.0 DEG F)
RELATIVE HUMIDITY  63. PCT                       ABS. HUMIDITY 12.9 GM/KG         NOX HUMIDITY CORRECTION FACTOR  1.08
BAG RESULTS
   TEST CYCLE                                        C NYCC

   BLOWER DIF P MM. H2O(IN. H2O)                 774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)               774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)              43.3 (110.0)
   BLOWER REVOLUTIONS                               57864.
   TOT FLOW STD. CU. METRES(SCF)                 107.3 ( 3788.)
   THC SAMPLE METER/RANGE/PPM                    15.4/ 3/ 154.
   THC BCKGRD METER/RANGE/PPM                     1.1/ 3/  11.
   CO  SAMPLE METER/RANGE/PPM                    23.7/ 3/ 948.
   CO  BCKGRD METER/RANGE/PPM                      .1/ 3/   2.
   CO2 SAMPLE METER/RANGE/PCT                    38.5/ 3/ .6499
   CO2 BCKGRD METER/RANGE/PCT                     2.6/ 3/ .0397
   NOX SAMPLE METER/RANGE/PPM                    21.6/ 2/ 21.6
   NOX BCKGRD METER/RANGE/PPM                      .8/ 2/   .8
   DILUTION FACTOR                                  18.65
   THC CONCENTRATION PPM                            144.
   CO  CONCENTRATION PPM                            528.
   CO2 CONCENTRATION PCT                            .6123
   NOX CONCENTRATION PPM                            20.8
   THC MASS GRAMS                                    8.88
   CO  MASS GRAMS                                   65.92
   CO2 MASS GRAMS                                 1202.6
   NOX MASS GRAMS                                    4.61
   RUN TIME                SECONDS                  722.
        DFC, WET (DRY)                           .946 ( .927)
        SCF, WET (DRY)                          1.000 ( .974)
        VOL (SCM)                                  107.3
        SAM BLR (SCM)                               0.00
        KM  (MEASURED)                               .82

   TEST NUMBER,                                   967
   BAROMETER,              MM HG                  740.7
   HUMIDITY,               G/KG                    12.9
   TEMPERATURE,            DEG C                   25.0
   CARBON DIOXIDE,          G/KM                 1472.4        G/MIN          99.9
   FUEL CONSUMPTION,        L/100KM                69.73        L/100MIN        4.75

   HYDROCARBONS, (THC)     G/KM                    10.87        G/MIN           0.74
   CARBON MONOXIDE,        G/KM                    80.71        G/MIN           5.48
   OXIDES OF NITROGEN,     G/KM                     5.65        G/MIN           0.38
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                                             H NYCC- VEHICLE EMISSIONS RESULTS -
                                                  PROJECT 05-6619-004

TEST NO.   967       RUN   1                     VEHICLE NO.96                    TEST WEIGHT  1814. KG( 4000. LBS)
VEHICLE MODEL   78 CHEVROLET NOVA                DATE      8/30/82                ACTUAL ROAD LOAD   7.8 KW( 10.5 HP)
ENGINE 4.1 L(250. CID)                           BAG CART NO.  1                  GASOLINE  EM-518-F
TRANSMISSION A3                                  DYNO NO.      3                  ODOMETER 94052. KM(58441. MILES)
                                                 CVS NO.   2

BAROMETER 743.71 MM HG(29.28 IN HG)              DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)
RELATIVE HUMIDITY  63. PCT                       ABS. HUMIDITY 12.4 GM/KG         NOX HUMIDITY CORRECTION FACTOR  1.06
BAG RESULTS
   TEST CYCLE                                        H NYCC

   BLOWER DIF P MM. H2O(IN. H2O)                 774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)               774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)              40.6 (105.0)
   BLOWER REVOLUTIONS                               57749.
   TOT FLOW STD. CU. METRES(SCF)                 108.1 ( 3817.)
   THC SAMPLE METER/RANGE/PPM                    63.3/ 2/  63.
   THC BCKGRD METER/RANGE/PPM                    12.7/ 2/  13.
   CO  SAMPLE METER/RANGE/PPM                    32.8/13/  30.
   CO  BCKGRD METER/RANGE/PPM                     4.1/13/   4.
   CO2 SAMPLE METER/RANGE/PCT                    34.4/ 3/ .5748
   CO2 BCKGRD METER/RANGE/PCT                     2.7/ 3/ .0413
   NOX SAMPLE METER/RANGE/PPM                    13.1/ 2/ 13.1
   NOX BCKGRD METER/RANGE/PPM                     1.4/ 2/  1.4
   DILUTION FACTOR                                  22.94
   THC CONCENTRATION PPM                             51.
   CO  CONCENTRATION PPM                             26.
   CO2 CONCENTRATION PCT                            .5353
   NOX CONCENTRATION PPM                            11.8
   THC MASS GRAMS                                    3.19
   CO  MASS GRAMS                                    3.25
   CO2 MASS GRAMS                                 1059.4
   NOX MASS GRAMS                                    2.57
   RUN TIME                SECONDS                  721.
        DFC, WET (DRY)                           .956 ( .937)
        SCF, WET (DRY)                          1.000 ( .974)
        VOL (SCM)                                  108.1
        SAM BLR (SCM)                               0.00
        KM  (MEASURED)                               .83

   TEST NUMBER,                                   967
   BAROMETER,              MM HG                  743.7
   HUMIDITY,               G/KG                    12.4
   TEMPERATURE,            DEG C                   24.4
   CARBON DIOXIDE,          G/KM                 1272.4        G/MIN          88.2
   FUEL CONSUMPTION,        L/100KM                55.09        L/100MIN        3.81

   HYDROCARBONS, (THC)     G/KM                     3.83        G/MIN           0.27
   CARBON MONOXIDE,        G/KM                     3.90        G/MIN           0.27
   OXIDES OF NITROGEN,     G/KM                     3.09        G/MIN           0.21
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APPENDIX E

ADDITIONAL TEST RESULTS

Table E-1	Ford Fairlane -	Test 917-30 Second Cold Start Idle
Table E-2	Chevrolet Nova -	Test 963-30 Second Cold Start Idle
Table E-3	Ford Fairlane -	Test 917 - Hot Modified NYCC - 4875 Inertia Weight
Table E-4	Chevrolet Nova -	Test 967 - Hot Modified NYCC - 4875 Inertia Weight
Table E-5	Ford Fairlane -	Test 918 - Cold Idle
Table E-6	Ford Fairlane -	Test 919 - Cold Idle

TABLE E-1. C-IDLE - VEHICLE EMISSIONS RESULTS - FAIRLANE RICH BEST IDLE
PROJECT 05-6619-004

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TEST NO.   917      RUN 1                            VEHICLE NO.91                   TEST WEIGHT  1814. KG( 4000. LBS)
VEHICLE MODEL   70 FORD FAIRLANE                     DATE     5/20/82                ACTUAL ROAD LOAD    8.9 KW( 12.0 HP)
ENGINE 4.9 L(302. CID) V-8                           BAG CART NO.  1                 GASOLINE  EM-516-F
TRANSMISSION A3                                      DYNO NO.      3                 ODOMETER ****** KM(67538. MILES)
                                                     CVS NO.   2

BAROMETER 739.90 MM HG(29.13 IN HG)                  DRY BULB TEMP. 25.6 DEG C(78.0 DEG F)
RELATIVE HUMIDITY  50. PCT                           ABS. HUMIDITY 10.5 GM/KG        NOX HUMIDITY CORRECTION FACTOR   .99
BAG RESULTS
   TEST CYCLE                                           30 S

   BLOWER DIF P MM. H2O(IN. H2O)                    774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)                  767.1 (30.2)
   BLOWER INLET TEMP. DEG. C(DEG. F)                 43.9 (111.0)
   BLOWER REVOLUTIONS                                   2408.
   TOT FLOW STD. CU. METRES(SCF)                      4.5 (  157.)
   HC  SAMPLE METER/RANGE/PPM                      47.4/ 3/ 474.
   HC  BCKGRD METER/RANGE/PPM                       1.6/ 3/  16.
   CO  SAMPLE METER/RANGE/PPM                      28.5/ 3/ 664.
   CO  BCKGRD METER/RANGE/PPM                        .2/ 3/   5.
   CO2 SAMPLE METER/RANGE/PCT                      30.9/ 3/  .51
   CO2 BCKGRD METER/RANGE/PCT                       3.2/ 3/  .05
   NOX SAMPLE METER/RANGE/PPM                       6.4/ 2/   6.
   NOX BCKGRD METER/RANGE/PPM                       1.2/ 2/   1.
   DILUTION FACTOR                                     21.48
   HC  CONCENTRATION PPM                               459.
   CO  CONCENTRATION PPM                               643.
   CO2 CONCENTRATION PCT                                .47
   NOX CONCENTRATION PPM                                5.3
   HC  MASS GRAMS                                       1.18
   CO  MASS GRAMS                                       3.34
   CO2 MASS GRAMS                                      38.0
   NOX MASS GRAMS                                        .04
   RUN TIME                  SECONDS                   30.
        DFC, WET (DRY)                              .953 ( .938)
        SCF, WET (DRY)                             1.000 ( .979)
        VOL (SCM)                                       4.5
        SAM BLR (SCM)                                   0.00

   TEST NUMBER,                                     917
   BAROMETER,               MM HG                     739.9
   HUMIDITY,                G/KG                       10.5
   TEMPERATURE,             DEG C                      25.6
   CARBON DIOXIDE,          G/MIN                      75.9
   FUEL CONSUMPTION,        L/100 MIN                  4.01

   HYDROCARBONS,            G/MIN                      2.36
   CARBON MONOXIDE,         G/MIN                      6.67
   OXIDES OF NITROGEN,      G/MIN                       .09
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TABLE E-2. 30 SEC- VEHICLE EMISSIONS RESULTS - PROJECT 05-6619-004

```
TEST NO.  963      RUN   1                     VEHICLE NO.96                     TEST WEIGHT  1814. KG( 4000. LBS)
VEHICLE MODEL   78 CHEVROLET NOVA               DATE     8/31/82                  ACTUAL ROAD LOAD   7.8 KW( 10.5 HP)
ENGINE 4.1 L(250. CID)                          BAG CART NO.  1                   GASOLINE  EM-518-F
TRANSMISSION A3                                 DYNO NO.      3                   ODOMETER 94071. KM(58453. MILES)
                                                CVS NO.   2

BAROMETER 744.47 MM HG(29.31 IN HG)             DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
RELATIVE HUMIDITY  66. PCT                      ABS. HUMIDITY 12.6 GM/KG          NOX HUMIDITY CORRECTION FACTOR  1.07
BAG RESULTS
   TEST CYCLE                                      30 SEC

   BLOWER DIF P MM. H2O(IN. H2O)                774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)              774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)             43.3 (110.0)
   BLOWER REVOLUTIONS                              2412.
   TOT FLOW STD. CU. METRES(SCF)                  4.5 (  159.)
   THC SAMPLE METER/RANGE/PPM                   14.3/ 4/1430.
   THC BCKGRD METER/RANGE/PPM                    1.6/ 3/  16.
   CO  SAMPLE METER/RANGE/PPM                   72.2/ 1/7683.
   CO  BCKGRD METER/RANGE/PPM                     .2/ 3/   5.
   CO2 SAMPLE METER/RANGE/PCT                   26.8/ 3/ .4391
   CO2 BCKGRD METER/RANGE/PCT                    2.7/ 3/ .0413
   NOX SAMPLE METER/RANGE/PPM                    2.6/ 2/  2.6
   NOX BCKGRD METER/RANGE/PPM                    1.2/ 2/  1.2
   DILUTION FACTOR                                 10.09
   THC CONCENTRATION PPM                          1416.
   CO  CONCENTRATION PPM                          7450.
   CO2 CONCENTRATION PCT                          .4019
   NOX CONCENTRATION PPM                            1.5
   THC MASS GRAMS                                  3.67
   CO  MASS GRAMS                                 39.01
   CO2 MASS GRAMS                                  33.1
   NOX MASS GRAMS                                   .01
   RUN TIME               SECONDS                   30.
       DFC, WET (DRY)                           .901 ( .882)
       SCF, WET (DRY)                          1.000 ( .975)
       VOL (SCM)                                    4.5
       SAM BLR (SCM)                               0.00


   TEST NUMBER,                                  962
   BAROMETER,             MM HG                  744.5
   HUMIDITY,             G/KG                     12.6
   TEMPERATURE,          DEG C                    23.9
   CARBON DIOXIDE,        G/MIN                   66.2
   FUEL CONSUMPTION,      L/100 MIN               9.05

   HYDROCARBONS, (THC)    G/MIN                   7.34
   CARBON MONOXIDE,       G/MIN                  77.98
   OXIDES OF NITROGEN,    G/MIN                    .03
```

TABLE E-3. H - NYCC - VEHICLE EMISSIONS RESULTS - FAIRLANE RICH BEST IDLE

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                                        PROJECT 05-6619-004

TEST NO.  917      RUN   2                  VEHICLE NO.91                     TEST WEIGHT 2211 . KG(4875 . LBS)
VEHICLE MODEL   70 FORD FAIRLANE            DATE     5/20/82                  ACTUAL ROAD LOAD    8.9 KW( 12.0 HP)
ENGINE 4.9 L(302. CID) V-8                  BAG CART NO.  1                   GASOLINE EM-516-F
TRANSMISSION A3                             DYNO NO.      3                   ODOMETER ****** KM(67549. MILES)
                                            CVS NO.   2

BAROMETER 739.90 MM HG(29.13 IN HG)         DRY BULB TEMP. 25.0 DEG C(77.0 DEG F)
RELATIVE HUMIDITY  53. PCT                  ABS. HUMIDITY 10.7 GM/KG          NOX HUMIDITY CORRECTION FACTOR  1.00
BAG RESULTS
  TEST CYCLE                                  H-NY

  BLOWER DIF P MM. H2O(IN. H2O)             789.9 (31.1)
  BLOWER INLET P MM. H2O(IN. H2O)           784.9 (30.9)
  BLOWER INLET TEMP. DEG. C(DEG. F)          42.8 (109.0)
  BLOWER REVOLUTIONS                          57701.
  TOT FLOW STD. CU. METRES(SCF)             106.8 ( 3770.)
  HC  SAMPLE METER/RANGE/PPM                13.4/ 3/ 134.
  HC  BCKGRD METER/RANGE/PPM                 1.5/ 3/  15.
  CO  SAMPLE METER/RANGE/PPM                67.6/ 3/1745.
  CO  BCKGRD METER/RANGE/PPM                  .1/ 3/   2.
  CO2 SAMPLE METER/RANGE/PCT                37.5/ 3/  .63
  CO2 BCKGRD METER/RANGE/PCT                 2.5/ 3/  .04
  NOX SAMPLE METER/RANGE/PPM                16.2/ 2/  16.
  NOX BCKGRD METER/RANGE/PPM                  .7/ 2/   1.
  DILUTION FACTOR                              16.46
  HC  CONCENTRATION PPM                        120.
  CO  CONCENTRATION PPM                       1692.
  CO2 CONCENTRATION PCT                         .60
  NOX CONCENTRATION PPM                        15.5
  HC  MASS GRAMS                                7.38
  CO  MASS GRAMS                              210.29
  CO2 MASS GRAMS                              1164.3
  NOX MASS GRAMS                                3.17
  RUN TIME              SECONDS                720.
      DFC, WET (DRY)                        .939 ( .923)
      SCF, WET (DRY)                       1.000 ( .977)
      VOL (SCM)                                106.8
      SAM BLR (SCM)                             0.00
      KM  (MEASURED)                             .77

  TEST NUMBER,                               917
  BARON.ETER,           MM HG                 739.9
  HUMIDITY,             G/KG                   10.7
  TEMPERATURE,          DEG C                  25.0
  CARBON DIOXIDE,       G/KM                 1512.1       G/MIN        97.0
  FUEL CONSUMPTION,     L/100KM               84.16       L/100 MIN     5.40

  HYDROCARBONS,         G/KM                   9.59       G/MIN         0.62
  CARBON MONOXIDE,      G/KM                 273.10       G/MIN        17.52
  OXIDES OF NITROGEN,   G/KM                   4.12       G/MIN         0.26
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TABLE E-4. H NYCC- VEHICLE EMISSIONS RESULTS - PROJECT 05-6619-004

```
TEST NO.   967       RUN   1                      VEHICLE NO.96                TEST WEIGHT  2211. KG( 4875. LBS)
VEHICLE MODEL   78 CHEVROLET NOVA                 DATE    8/30/82              ACTUAL ROAD LOAD   7.8 KW( 10.5 HP)
ENGINE 4.1 L(250. CID)                            BAG CART NO.  1              GASOLINE  EM-518-F
TRANSMISSION A3                                   DYNO NO.      3              ODOMETER 94058. KM(58445. MILES)
                                                  CVS NO.   2

BAROMETER 743.71 MM HG(29.28 IN HG)               DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)
RELATIVE HUMIDITY  59. PCT                        ABS. HUMIDITY 11.6 GM/KG     NOX HUMIDITY CORRECTION FACTOR  1.03
BAG RESULTS
   TEST CYCLE                                       H NYCC

   BLOWER DIF P MM. H2O(IN. H2O)                 774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)               774.7 (30.5)
   BLOWER INLET TEMP. DEG. C(DEG. F)              39.4 (103.0)
   BLOWER REVOLUTIONS                               57730.
   TOT FLOW STD. CU. METRES(SCF)                 108.3 ( 3824.)
   THC SAMPLE METER/RANGE/PPM                    58.3/ 2/  58.
   THC BCKGRD METER/RANGE/PPM                    11.9/ 2/  12.
   CO  SAMPLE METER/RANGE/PPM                    29.8/13/  27.
   CO  BCKGRD METER/RANGE/PPM                     2.9/13/   3.
   CO2 SAMPLE METER/RANGE/PCT                    35.0/ 3/ .5857
   CO2 BCKGRD METER/RANGE/PCT                     3.1/ 3/ .0474
   NOX SAMPLE METER/RANGE/PPM                    14.0/ 2/ 14.0
   NOX BCKGRD METER/RANGE/PPM                     1.4/ 2/  1.4
   DILUTION FACTOR                                   22.55
   THC CONCENTRATION PPM                             47.
   CO  CONCENTRATION PPM                             24.
   CO2 CONCENTRATION PCT                            .5404
   NOX CONCENTRATION PPM                             12.7
   THC MASS GRAMS                                    2.93
   CO  MASS GRAMS                                    3.04
   CO2 MASS GRAMS                                  1071.3
   NOX MASS GRAMS                                    2.70
   RUN TIME             SECONDS                      722.
        DFC, WET (DRY)                            .956 ( .937)
        SCF, WET (DRY)                           1.000 ( .975)
        VOL (SCM)                                  108.3
        SAM BLR (SCM)                                0.00
        KM  (MEASURED)                                .78

   TEST NUMBER,                                   967
   BARBAROMETER,          MM HG                   743.7
   HUMIDITY,            G/KG                      11.6
   TEMPERATURE,         DEG C                     24.4
   CARBON DIOXIDE,      G/KM                    1365.7       G/MIN          89.0
   FUEL CONSUMPTION,    L/100KM                   59.06       L/100MIN        3.83

   HYDROCARBONS, (THC)  G/KM                       3.74       G/MIN           0.24
   CARBON MONOXIDE,     G/KM                       3.87       G/MIN           0.25
   OXIDES OF NITROGEN,  G/KM                       3.45       G/MIN           0.22
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TABLE E-5. C-IDLE- VEHICLE EMISSIONS RESULTS - FAIRLANE RICH BEST IDLE

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                                    PROJECT 05-6619-004
TEST NO.   918       RUN
VEHICLE MODEL   .70 FORD FAIRLANE            VEHICLE NO.91                  TEST WEIGHT  1814. KG( 4000. LBS)
ENGINE 4.9 L(302. CID) V-8                   DATE     5/19/82               ACTUAL ROAD LOAD   8.9 KW( 12.0 HP)
TRANSMISSION A3                              BAG CART NO.  1                GASOLINE EM-516-F
                                             DYNO NO.      3                ODOMETER 10865. KM( 6751. MILES)
                                             CVS NO.   2

BAROMETER 740.66 MM HG(29.16 IN HG)          DRY BULB TEMP. 24.4 DEG C(76.0 DEG F)
RELATIVE HUMIDITY  56. PCT                   ABS. HUMIDITY 10.9 GM/KG         NOX HUMIDITY CORRECTION FACTOR  1.01
BAG RESULTS
   TEST CYCLE                                    C-ID

   BLOWER DIF P MM. H2O(IN. H2O)              774.7 (30.5)
   BLOWER INLET P MM. H2O(IN. H2O)            764.5 (30.1)
   BLOWER INLET TEMP. DEG. C(DEG. F)           43.9 (111.0)
   BLOWER REVOLUTIONS                          24232.
   TOT FLOW STD. CU. METRES(SCF)               44.9 ( 1587.)
   HC   SAMPLE METER/RANGE/PPM                48.5/ 3/ 485.
   HC   BCKGRD METER/RANGE/PPM                 1.5/ 3/  15.
   CO   SAMPLE METER/RANGE/PPM                86.9/ 2/5228.
   CO   BCKGRD METER/RANGE/PPM                  .1/ 2/   4.
   CO2 SAMPLE METER/RANGE/PCT                 69.5/ 3/ 1.25
   CO2 BCKGRD METER/RANGE/PCT                  2.9/ 3/  .04
   NOX SAMPLE METER/RANGE/PPM                 39.3/ 2/  39.
   NOX BCKGRD METER/RANGE/PPM                   .5/ 2/   1.
   DILUTION FACTOR                                 7.43
   HC   CONCENTRATION PPM                        472.
   CO   CONCENTRATION PPM                       5005.
   CO2 CONCENTRATION PCT                         1.22
   NOX CONCENTRATION PPM                         38.9
   HC   MASS GRAMS                               12.23
   CO   MASS GRAMS                              261.81
   CO2 MASS GRAMS                              1000.0
   NOX MASS GRAMS                                3.37
   RUN TIME                   SECONDS            302.
        DFC, WET (DRY)                        .865 ( .850)
        SCF, WET (DRY)                       1.000 ( .970)
        VOL (SCM)                                44.9
        SAM BLR (SCM)                            0.00

   TEST NUMBER,                                918
   BARONETER,              MM HG               740.7
   HUMIDITY,               G/KG                 10.9
   TEMPERATURE,            DEG C                24.4
   CARBON DIOXIDE,         G/MIN               198.7
   FUEL CONSUMPTION,       L/100 MIN            12.30

   HYDROCARBONS,           G/MIN                2.43
   CARBON MONOXIDE,        G/MIN               52.02
   OXIDES OF NITROGEN,     G/MIN                0.67
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TABLE E-6. C-IDLE- VEHICLE EMISSIONS RESULTS - FAIRLANE RICH BEST IDLE
PROJECT 05-6619-004

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TEST NO.   919      RUN   1                    VEHICLE NO.91                 TEST WEIGHT  1814. KG( 4000. LBS)
VEHICLE MODEL   70 FORD FAIRLANE               DATE     5/21/82              ACTUAL ROAD LOAD   8.9 KW( 12.0 HP)
ENGINE 4.9 L(302. CID) V-8                     BAG CART NO.  1               GASOLINE  EM-516-F
TRANSMISSION A3                                DYNO NO.      3               ODOMETER      0. KM(     0. MILES)
                                               CVS NO.   2

BAROMETER 740.92 MM HG(29.17 IN HG)            DRY BULB TEMP. 23.9 DEG C(75.0 DEG F)
RELATIVE HUMIDITY  70. PCT                     ABS. HUMIDITY 13.4 GM/KG      NOX HUMIDITY CORRECTION FACTOR  1.10
BAG RESULTS
   TEST CYCLE                                    C-ID

   BLOWER DIF P MM. H2O(IN. H2O)               784.9 (30.9)
   BLOWER INLET P MM. H2O(IN. H2O)             772.2 (30.4)
   BLOWER INLET TEMP. DEG. C(DEG. F)            43.9 (111.0)
   BLOWER REVOLUTIONS                             24960.
   TOT FLOW STD. CU. METRES(SCF)                46.2 ( 1633.)
   HC  SAMPLE METER/RANGE/PPM                  27.4/ 3/ 274.
   HC  BCKGRD METER/RANGE/PPM                   1.3/ 3/  13.
   CO  SAMPLE METER/RANGE/PPM                  71.3/ 3/1864.
   CO  BCKGRD METER/RANGE/PPM                    .1/ 3/   2.
   CO2 SAMPLE METER/RANGE/PCT                  50.1/ 3/  .87
   CO2 BCKGRD METER/RANGE/PCT                   3.3/ 3/  .05
   NOX SAMPLE METER/RANGE/PPM                   9.6/ 2/  10.
   NOX BCKGRD METER/RANGE/PPM                    .4/ 2/   0.
   DILUTION FACTOR                                 12.46
   HC  CONCENTRATION PPM                          262.
   CO  CONCENTRATION PPM                         1789.
   CO2 CONCENTRATION PCT                            .82
   NOX CONCENTRATION PPM                           9.2
   HC  MASS GRAMS                                  6.99
   CO  MASS GRAMS                                 96.29
   CO2 MASS GRAMS                                 696.5
   NOX MASS GRAMS                                   .90
   RUN TIME             SECONDS                   311.
        DFC, WET (DRY)                         .920 ( .899)
        SCF, WET (DRY)                        1.000 ( .969)
        VOL (SCM)                                 46.2
        SAM BLR (SCM)                             0.00


   TEST NUMBER,                                  919
   BARONETER,           MM HG                    740.9
   HUMIDITY,            G/KG                      13.4
   TEMPERATURE,         DEG C                     23.9
   CARBON DIOXIDE,      G/MIN                    134.4
   FUEL CONSUMPTION,    L/100 MIN                  7.17

   HYDROCARBONS,        G/MIN                      1.35
   CARBON MONOXIDE,     G/MIN                     18.58
   OXIDES OF NITROGEN,  G/MIN                      0.17
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